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HELMINTHIASIS.

LEIPER (R. T.). **Present-Day Teachings on Helminthology in Relation to Public Health.**—*Brit. Med. Jl.* 1924. July 19. pp. 110–113.

Leiper alleges a lamentable ignorance of facts and principles of helminthology to be a failing common among medical officers of health. He puts the blame upon those teachers and textbooks of hygiene that profess to deal with the subject, and as a public duty he condemns out of their own mouth these blind leaders of the blind. But to guard them all from the ditch he here provides a useful summary of those generalities concerning helminth transmission that are of constant and fundamental significance for the public health. He briefly illustrates and expands the established propositions that: (*a*) Parasitic worms do not increase in the body of a human host, though they produce a multitude of eggs or embryos there; (*b*) these eggs or embryos must, as a necessary prelude to any prospective infection, be discharged from the host in which they were produced; (*c*) these eggs or embryos, after their discharge, must undergo certain developmental changes in the external environment before they attain a stage infective to man; (*d*) these developmental changes can go on only under certain definite conditions of this environment, the necessary conditions varying with the different species and sometimes being protracted and recondite; (*e*) the infective form may enter the body of the prospective host in various ways proper to the particular species; (*f*) after effecting an entry into the proper host the immature infective form may have to undergo a circuitous journey before it reaches the particular site where it can attain sexual maturity; (*g*) many of the parasitic worms of man are common to him and certain domestic animals; (*h*) the control of helminth infection depends upon a knowledge of the specific life-cycles and their vulnerable points.

A. Alcock.

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MIYAGAWA (Yoneji). **Recent Progress in Parasitology made by Japanese Investigators.**—*Far Eastern Assoc. Trop. Med. Trans. Fifth Biennial Congress, Singapore,* 1923. pp. 420–433. *Scientific Reports from Govt. Inst. for Infectious Diseases.* Tokyo. 1923. Vol. 2. pp. 473–484: and *Japan Med. World.* 1924. Oct. 15. Vol. 4. No. 10. pp. 251–257.

This paper briefly summarizes the outstanding discoveries in medical helminthology by Japanese investigators during recent years. These have already been annotated in the *Tropical Diseases Bulletin* from time to time and recently summarized in a critical review. [It is regrettable that there is no bibliography with the article.]

R. T. Leiper.

CORT (William W.). **Lectures in Helminthology, delivered at the Manchuria Medical College, Nov. 12 to 15, 1923.**—*Jl. Oriental Med.* Dairen. 1923. Nov. & 1924. Feb. Vol. 1. No. 4; Vol. 2. No. 1. pp. 183–188; 1–20. [16 refs.]

In four lectures at the Manchuria Medical College Dr. Cort analysed first some of the factors influencing the distribution and incidence of worms parasitic in man, then considered in detail the factors which are influencing the spread of the more important trematode infestations in the Orient and the methods available for their control. Thereafter are summarized the recent investigations on the life cycle of Ascaris and hookworm and their bearing on the control of human infections.

R. T. L.

JOYEUX (Ch.). **Liste de quelques helminthes récoltés dans les colonies portugaises d'Afrique.**—*Ann. Parasit. Humaine et Comparée.* 1924. July. Vol. 2. No. 3. pp. 232–235. With 1 fig. [10 refs.]

During a brief visit to St. Paul-de-Loanda for the Congress of Tropical Medicine, a collection of parasites was made in Angola and Mozambique. The list includes the following of medical interest:—

(a) *Cattle.* Hydatid cysts are common in Loanda and Lorenço Marques. *Cysticercus bovis* (larva of *T. saginata*) occurred in 10 per cent. of the cattle examined at Benguela and was common at Loanda and at Lorenço Marques. *Fasciola hepatica* found at Lorenço Marques and Loanda. *Fasciola gigantica* at Loanda, Benguela, Mossamèdes, Lorenço Marques.

(b) *Pigs. Cysticercus cellulosae* (larva of *T. solium*) frequent at Loanda, at Benguela (nearly 10 per cent.) and Lorenço Marques.

R. T. L.

FAUST (Ernest Carroll). **Observations on North China Intestinal Parasites of Man based on an Intensive Examination of Patients in a Medical Ward of the Peking Union Medical College Hospital.**—*Amer. Jl. Trop. Med.* 1924. July. Vol. 4. No. 4. pp. 411–437. [6 refs.]

An intensive study of 60 third-class patients in the medical service of the Peking Union Medical College Hospital was undertaken to determine the importance of parasitic infection in clinical diagnoses in North China. Every stool of the patient was examined during a period

of ten days or more, and in all 1,409 stools, averaging 23·48 per patient, were dealt with. It was found that concentrative methods only added 10 per cent. to the findings where large numbers of stools of the same patient were examined. 40 per cent. of the infections were diagnosed after the 1st day, 35 per cent. of which were diagnosed first from unconcentrated preparations. The incidence of entozoal infection was 80 per cent., and is less intensive than that of a sick population in Central China. The clinical significance of these studies is demonstrated by the fact that 53·3 per cent. of the series harboured clinically important parasite infections. 20 per cent. had a major diagnosis due to parasites, 46·6 per cent. a minor diagnosis of parasites, and 13·3 per cent. had both major and minor diagnoses occasioned by entozoal infections of the digestive tract. At least 89 per cent. of the patients had acquired infection in North China. It was observed that although the Chinese as a people are not less susceptible to parasitic infection than other peoples, light infections among them are less likely to be clinically significant than in Occidentals living in China. All the infections observed were the result of improper night soil disposal.

R. T. L.

Li (K. H.). **Incidence of Parasitic Helminths in Soochow. A Preliminary Report.**—*Nat. Med. Jl. China.* 1924. Feb. Vol. 10. No. 1. pp. 7–19. [3 refs.]

At the Soochow Hospital the author has conducted a microscopical examination of the faeces of 1,034 in-patients, and has analysed his findings according to age, sex, occupation, residence and incidence of specific infections in combination, etc. High and severe infections were generally found in the poor and in young children. With advancing age and scholastic standing the degree of intestinal infestation appeared to decrease. The percentage of infections in the 1,034 cases were :— Hookworm 16·6 per cent., Ascaris 40·0 per cent., Trichuris 13·7 per cent., Schistosoma 3·1 per cent., Fasciolopsis 0·8 per cent.

R. T. L.

Bernard (P. Noël), Bablet (J.) & Pons (R.). **Les vers intestinaux en Cochinchine.**—*Bull. Soc. Path. Exot.* 1924. July 9. Vol. 17. No. 7. pp. 577–582. [13 refs.]

Although there are numerous records of helminthic infection among the indigenous population of Cochin-China, no complete statistics have been published. The authors, in order to remedy this defect, carried out 2,878 faecal examinations. The paper being statistical in nature does not lend itself to abstraction, but the results obtained are given also in a Table comparing these with the findings of previous investigators in Annam and Tonkin. An abstract from this Table is the following :—

Number examined	2,878
Percentage infected	85·20
Ascaris lumbricoides	71·30
Ankylostomes (mostly *A. duodenale*)	37·75
Trichuris trichiura	18·35
Oxyuris vermicularis	0·20
Strongyloides intestinalis	1·60
Taenia	1·40
Trematodes (*F. buski* in provinces)	0·1 to 3

Among the Europeans infection is much less. In Saigon the percentages were Ascaris 12, Trichuris 12–15, Ankylostomes and Strongyloides 1 each, Oxyuris and Taenia 0·2.

H. Harold Scott.

Saito (Tohru), Hiyama (Tatewo) & Nagamine (Michiwo). [**Report on the Examination of the School Children for Intestinal Parasites. Influences of Ascaris on the Body Development and Learning Capacity of the School Children.**]—*Chiba Igakkwai Zasshi (Jl. Chiba. Med. Soc.).* 1924. Jan. Vol. 2. No. 1. [Summarized in *Japan Med. World.* 1924. Apr. 15. Vol. 4. No. 4. p. 96.]

82·2 per cent. of 1,266 school children in a seaside village in Japan were found, from microscopical examination of the faeces, to harbour Trichocephalus 67·6 per cent., Oxyuris 1·8 per cent., Ankylostoma 5·5 per cent., *Trichostrongylus orientalis* 13·2 per cent., *Metagonimus yokogawai* 0·1 per cent., *Hymenolepis nana* 0·3 per cent., and Ascaris 44·5 per cent. The children harbouring Ascaris were shorter than the normal children and had less memory and thinking capacity. The infection among the children is stated to have been less than that among the farming villagers and higher than in city children.

R. T. L.

Sweet (W. C.). **The Intestinal Parasites of Man in Australia and its Dependencies as found by the Australian Hookworm Campaign.**—*Med. Jl. Australia.* 1924. Apr. 26. Year 11. Vol. 1. No. 17. pp. 405–407. [8 refs.]

Although this paper is a brief one, the amount of work of which it is the record was enormous. The author is Director of the Australian Hookworm Campaign and, with his associates, he had carried out examinations in the various parts of the Continent to determine the prevalence of helminthic infection. In all, 248,721 persons were examined, 202,582 in Australia and 48,139 in Papua and New Guinea. 19·4 per cent. of the whole were infected with hookworm. *Trichuris trichiura* was found in 4 per cent. ; in the south it was only 1 per cent., and the rate increased as the investigation proceeded into the more tropical districts. *Ascaris* infection was low in Australia, varying between 0·2 and 2 per cent., the latter occurring in Cape York Peninsula ; in Papua and New Guinea about 12 per cent. were infected. *Hymenolepis nana* was found in 0·4 per cent. of inhabitants of New Guinea. *Taenia* was rare, being seen in only 42 instances ; the species of 25 of these was not stated in the report, but of the remainder *T. solium* occurred in six, *T. saginata* in eleven ; the rarity of the latter in a country where so much beef is raised and consumed is remarkable. Of still rarer infections *Hymenolepis diminuta* was met with five times, *Diphyllobothrium latum* twice (both of these persons had come from Finland), *Clonorchis sinensis* twice (both in Chinese), and *Haemonchus contortus* [which has once only, in South America, been recorded from man previously] occurred three times amongst the aborigines of the Moore River Settlement in Western Australia.

H. H. S.

KOLPAKOWA (T. A.). **Materialien zur Statistik der Helminthiasis-Erkrankungen unter der Bevölkerung von Leningrad in den J. 1918–1923.** [Material for the Statistics of Helminth Infections in the Population of Leningrad 1918–1923.]—*Rev. Microbiol. et Epidémiol.* Saratov. 1924. Vol. 3. No. 1–2. In Russian pp. 81–85. German summary p. 109.

As worm infections depend more or less on the general mode of living, and on their dissemination in foodstuffs, the conditions in Leningrad during the revolutionary years with the vast upheaval in family life and the acute hunger which prevailed were very favourable to the spread of helminth infections. With the cessation in the sales of eatables in 1918 the population were reduced to exchanging their ration cards for a hunger ration consisting of one sixteenth to one quarter of a Russian pound of black bread, mixed with chaff, and a dried herring. Conditions like these did not raise considerations of purity or cleanliness in the mind, and frequently hospital patients could be seen collecting herring heads and other garbage from refuse bins. Moreover, the houses were without water, soap or fuel. The yards and waste grounds became covered with excreta. By 1919 the population had fallen from 3,000,000 to 700,000.

The author studied the incidence of helminth infection at the laboratory of the Medical Institute 1917–1921, and at the Bacteriological Laboratory, Farpoda, in 1922–23. In 1917 the investigations were made upon soldiers just returned from the trenches to the Military Hospital, and gave an infection rate of 64·5 per cent. In 1918–20, 156 persons in Leningrad were examined, and of these 26–28 per cent. were found infected. One case of *Hymenolepis nana* was found; a child of 6 years of age who for about 2 years had suffered from epileptic fits. Only about eight cases have been recorded hitherto for Russia. In 1921 the percentage of infestations with helminths rose to 37·78 per cent., due chiefly to *Ascaris lumbricoides* (9·7 per cent. to 23·8 per cent.). In 1922–23 of 380 inhabitants 32·8 per cent. were infected, of which 20·5 per cent. were due to *Ascaris lumbricoides*. These figures seem to show little change from those recorded for Leningrad in 1888, in spite of the advance in culture. The infections with *Dibothriocephalus latus* and *Trichuris trichiura* had not changed materially. *Taenia solium* and *T. saginata* had lessened from 3 per cent. to 1·3–0·52 per cent., but *Ascaris lumbricoides* had risen from 5 per cent. to 20–23 per cent. The explanation probably is that during the war period meat ceased to be used for food.

In 1919, 134 Finnish workmen were evacuated from the interior of Finland to Leningrad. The percentage of infected was 37·3 per cent. (with *Dibothriocephalus latus* 32·82 per cent., *Ascaris lumbricoides* 1·48 per cent., *Oxyuris vermicularis* 0·72 per cent. and *Taenia solium* 0·72 per cent.).

In 1918–1923 the increase in helminth infection in Leningrad occurred, in 1921 up to 37·3 per cent., chiefly due to *Ascaris lumbricoides* (63·3–68 per cent.). Such increase was due to the insanitary conditions which prevailed at the front, and their employment upon earth works probably accounted for the rise of *Trichocephalus* to 36·7 per cent. amongst the soldiers.

R. T. L.

Hall (Maurice C.). **Anthelmintics.** [Correspondence.]—*Lancet.* 1924. Sept. 13. pp. 577–578.

The author, apropos a previous article in the *British Medical Journal*, points out the fact that carbon tetrachloride has apparently no minimum lethal dose in the ordinary sense of the term. Thus, dogs will tolerate more than 80 times the dose found effective for their hookworms, and human subjects have taken as much as 50 cc. without ill effects, and when deaths have occurred they have followed the administration of a therapeutic dose. It seems, therefore, that the factor determining toxicity resides in the patient, namely, in such conditions as favour absorption of the drug; for example, gastro-enteritis, nephritis, cirrhosis of the liver. Oil of chenopodium, on the other hand, has a safety factor of only five. He points out that some anthelmintics act as their own purgative, as arecoline hydrobromide, others, as carbon tetrachloride, are mildly laxative, while others again, as oil of chenopodium, are actually constipating. The two latter, therefore, should be accompanied by a purgative, since removal is the aim of treatment. Since so little is known regarding the specific action of anthelmintics investigations to correlate anthelmintic efficiency with chemical composition and physical properties would probably be the most profitable line of research.

H. H. S.

Hall (Maurice C.). **Anthelmintic Warfare.**—*U.S. Nav. Med. Bull.* 1924. Sept. Vol. 21. No. 3. pp. 286–293. [1 ref.]

This is a lecture delivered at the United States Naval Medical School, and, though it does not bring forward any new factor—it was not intended to—it must have been very interesting to hear. A clever analogy is drawn between attacks on the enemy's position in warfare and anthelmintic treatment, showing how the foe may be attacked frontally by oral administration of drugs in repeated small doses or by mass attacks with bulky anthelmintics of low toxicity; or a rear attack, by rectal injection as for oxyuris, by flank attacks as by injections of tartar emetic for schistosomiasis, and so forth.

H. H. S.

May (Percy). **Anthelmintics and their Nomenclature.** [Correspondence.]—*Lancet.* 1924. Aug. 2. p. 248.

In this letter the author straightens out the confusion which has arisen from the use of the name "wormseed" to denote different plants employed as anthelmintics. *Artemisia maritima*, from which santonin is obtained, covers many species. The specimen so labelled at Kew corresponds with the Russian wormseed (though not strictly a seed). American wormseed, however, belongs to the Chenopodium family, the active principle of which is Ascaridol in the oil derived from the fruit. It contains no santonin. In a recent German publication the terms Wormseed oil (Wurmsamenöl) and Ol. chenopodii were used indiscriminately for the same preparation.

H. H. S.

Blanchard (M.) & Laigret (J.). **Pseudo-helminthiase intestinale.**—*Bull. Soc. Path. Exot.* 1924. July 9. Vol. 17. No. 7. p. 583.

A European consulted various medical men in order to be treated for "small worms, about 1 cm. in length," which, he stated, he was continually passing. Stools were sent up again and again but no worms or ova were

seen. He was, however, treated both internally and locally for oxyuriasis with every anthelmintic in the pharmacopoeia, but without result. Finally the patient was asked by the authors to send, not the stool but some of the worms. These proved to be fly larvae which were growing in the faecal deposit, the patient frequenting the same spot each day for defaecation. He thought that he himself had passed them, while the pruritus of which he complained was suggested by the question frequently put to him by the medical men to whom he had applied for treatment.

H. H. S.

DA SILVA (Gastão Pereira). **A proposito de um caso de bradycardia occasionada pela helminthiase intestinal.**—*Brazil Medico.* 1924. May 24. Year 38. Vol. 1. No. 21. pp. 290–291.

Apropos a case recently described as suffering from "cardiac neurosis" the author relates the two following:—(1) A man 19 years of age, after an attack of influenzal bronchitis, had a pulse-rate of 55 per minute. On suspicion of helminthic infection, a dose of calomel and santonin was given, and 6 large ascarides were expelled. Within 24 hours the pulse-rate was normal. (2) A boy of 15 years was suffering from cardiac distress, with crises of dyspnoea, a blowing murmur over the mitral area, and marked anaemia. Ankylostome ova were found on faecal examination. The symptoms cleared up entirely after treatment for the hookworm and the anaemia.

H. H. S.

SPARAPANI (Giuseppe Carlo). **De quelques modifications produites sur l'action toxolytique du suc d'autolyse hépatique par les toxines de la douve du foie et de l'échinocoque et sur les modifications déterminées par les toxines en question sur la fonction glycogénique du foie.**—*Jl. Physiol. et Path. Générale.* 1924. Apl. Vol. 22. No. 2. pp. 341–344. [18 refs.]

The autolytic extracts of the liver for these experiments were obtained in the following way: A small piece of liver was taken aseptically at the slaughter-house, the blood expressed and washed out from it, and the tissue placed in a sterile tube which was then carefully corked and kept for 6 days at 38°C. The fluid which collected at the bottom was freed from tissue fragments by centrifugation. Extracts were thus obtained from normal pig's liver and from livers infected with Echinococcus and Fasciola. In order to test the action of these extracts haemolytic toxins were employed. 2 cc. of *the toxin* were placed in each of fifteen tubes and one to fifteen drops of the extract were added. In each tube, after being kept for 8 hours in the incubator, was next placed 5 drops of an emulsion of rabbit's corpuscles in citrate-saline and the results noted at the end of 24 or 48 hours at 38°C. It was found that the extract of normal liver had a certain degree of antitoxic effect, which was diminished with extracts of liver infected with Echinococcus or Fasciola.

It was also found that the glycogen of the normal tissue was lowered by 76 to 56 per cent. in livers infested with Fasciola and from 61 to 39 per cent. in those containing cysts of Echinococcus. The importance of this is evident when one bears in mind the anti-infective and antitoxic functions of glycogen.

H. H. S.

Faust (Ernest Carroll). **Notes on Larval Flukes from China. II. Studies on Some Larval Flukes from the Central and South Coast Provinces of China.**—*Amer. Jl. Hyg.* 1924. July. Vol. 4. No. 4. pp. 241–301. With 2 plates & 3 text figs. [64 refs.]

This valuable contribution to our knowledge of the morphology and classification of the larval flukes of China and Japan describes a number of new species and gives names to a large unbaptized series already recorded in Japanese literature. There is an interesting review also of the relationship existing between the distribution of the molluscan hosts of the Sino-Japanese areas and the important fluke infections. Thus *Melania* spp. are related to Paragonimiasis, *Bythinia* spp. to Clonorchiasis, *Onchomelania* spp. to Schistosomiasis and the *Planorbidae* to Fasciolopsis. In the vicinity of Shaohsing human infection with *Clonorchis sinensis* is unknown, but 100 per cent. of the cats are infected and the *Melania hongkongensis* is the intermediary mollusc, while the encysted cercariae occur on many fishes not only of the family Cyprinidae but also on species of Percidae, Centrarchidae and Umbridae.

R. T. L.

Dekester (M.). **Un cas de distomatose sous-cutanée au Maroc.**—*Ann. Parasit. Humaine et Comparée.* 1924. Oct. Vol. 2. No. 4. pp. 322–324. [7 refs.]

A man of 40 years presented himself at the hospital in Fès with a swelling some 12 cm. in length in the lower right iliac region of the abdomen, slightly inflamed, itching, and, at times, painful, with a small scab at one end. Blood expressed on removal of the scab showed a large number of eosinophiles, one to every three leucocytes, but the peripheral blood showed no excess. The swelling proved to be due to an immature specimen of *Fasciola hepatica*. The author suggests that the cercaria may at times enter by way of the skin.

H. H. S.

Suzuki (Sotowo). **On an Inquiry into the Conditions of the Spread** of *Fasciolopsis buski.—Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1924. May. No. 234. In Japanese. pp. 77–83. [English summary p. 6.]

Pigs are heavily infested with *Fasciolopsis buski* in those areas of Formosa where the water-chestnut is extensively grown. In the province of Takkao 29·9 per cent. are infected, while in that of Saersho, which is the principal place of cultivation, the extent of infection reached 60 per cent. So far no case of infection has been recorded from the inhabitants.

R. T. L.

Ando (Akira) & Tsuyuki (Hiroshi). [**On the Endemic of Pulmonary Distomiasis in Tokigun, Gifu Prefecture.**]—*Iji-Shimbun* (*Med. News*). 1924. Mar. No. 1136. [Summarized in *Japan Med. World.* 1924. May 15. Vol. 4. No. 5. pp. 120–121.]

A few instances of Paragonimus infection were met with in Tokigun, but, though 1,214 fresh-water crabs were examined, only two were infected and no snail infection could be found. It is concluded that the origin of the human cases was situated in the neighbouring heavily infested district of Kadigun.

H. H. S.

Funaki (Hideharu). [**On the Influence of Bayer No. 205 on the Eggs of Lung Distome.**]—*Iji-Shimbun* (*Med. News*). 1924. Jan. No. 1131. [Summarized in *Japan Med. World.* 1924. Mar. 15. Vol. 4. No. 3. pp. 70–71.]

The author considers that the effects of Bayer 205 on the very few cases of paragonomiasis for which he had sufficient of the drug available were very promising. The eggs appeared to have a changed form as a result of the treatment. [Dosage used is not stated.]

R. T. L.

Moore (Dunlop). **Note on the Longevity of** *Clonorchis sinensis.*—*Public Health Rep.* 1924. July 25. Vol. 39. No. 30. pp. 1802–1803.

More than 90 per cent. of Chinese immigrants on arrival at San Francisco are found infected with helminths—clonorchis, ascaris, trichuris, ankylostome, and others. After long residence out of Asia the clonorchis infection is found to persist, although the others disappear. In this note mention is made of persons continuing to pass ova of *Clonorchis sinensis* after long periods of uninterrupted residence in Central America, in one case as long as 20 years, while another had lived in Costa Rica continuously for 25 years, never revisiting China or any part of Asia, but still retained his infection with clonorchis.

H. H. S.

Ch'en Pang. **A Comparative Study of** *Clonorchis sinensis* **(Cobbold).**—*Far Eastern Assoc. Trop. Med. Trans. Fifth Biennial Congress, Singapore,* 1923. pp. 434–446. With 2 charts & 35 figs. [13 refs.]

Looss considered that two species of the genus Clonorchis inhabited man, but this view was not accepted by other workers. The author has examined in detail material from man, domestic cat, wild cat, dog, marten and badger and gives numerous measurements and other grounds in support of his conclusion that the *Clonorchis sinensis* is relatively variable, even in one host. Although there are differences in size, there are no constant specific differences in internal anatomy. All the specimens appeared to belong to one species.

R. T. L.

Wayson (N. E.). **Spontaneous Hatching of Clonorchis Ova. A Preliminary Note on the Investigation to determine whether Clonorchiasis may be disseminated on the Pacific Slope.**—*Public Health Rep.* 1924. Apr. 25. Vol. 39. No. 17. pp. 861–862. [4 refs.]

The eggs of *Clonorchis sinensis* were kept in tapwater at room temperature varying from 14° to 20° C. At the end of five weeks the eggs were intact. On exposure to running filtered water at 24° to 26° C. the embryos began to escape. [Details of the investigations to determine whether clonorchiasis may be disseminated on the Pacific Slope referred to in the title are merely promised in the text.]

R. T. L.

Ando (Akira) & Kobori (Kotaro). [**On the Unnatural Route of Infection of** *Clonorchis sinensis* **(I Communication).**]—*Chugai Iji Shimpo* (*Central Med. Jl.*). 1924. May. Vol. 43. No. 9. [Summarized in *Japan Med. World.* 1924. Aug. 15. Vol. 4. No. 8. p. 202.]

By feeding fish containing encysted cercariae of *Clonorchis sinensis* to dogs and rabbits large numbers of free larvae were obtained. These could not survive in artificial gastric juice nor could infection be induced by feeding them to rabbits and albino rats. Attempts to infect a bird by feeding with fish containing the encysted larvae also failed.

R. T. L.

Soto (Jaquin). [**Primo caso de distomatosis encontrado en El Salvador.**] —*La Clinica.* San Salvador. 1922. Vol. 1. Pt. 6. No. 5, 6, 7. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1924. May. Vol. 28. No. 5. p. 219.]

The title is misleading, as this first case of distomatosis met with in El Salvador was one of *Clonorchis sinensis* in a Chinaman.

R. T. L.

Nishigori (Masao). **On a New Species of Fluke,** *Stamnosoma formosanum,* **and its Life-History.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1924. May. No. 234. In Japanese pp. 1–48. With 2 plates & 1 chart. English summary pp. 1–3.

From the gills of several species of freshwater fishes from the neighbourhood of Taihoku City the author obtained encysted cercariae which in experimental animals developed into *Stamnosoma formosanum* n.sp., the egg of which has some resemblance to those of *Clonorchis sinensis, Metagonimus yokogawai* and Heterophyes. The adult worm has been found as a natural infection in the night-heron but can probably be experimentally reared in cats, dogs, rats, rabbits, guineapigs, and has been successfully developed in man. The first intermediary is a Melania.

R. T. L.

Day (H. B.). **The Etiology of Egyptian Splenomegaly and Hepatic Cirrhosis.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1924. June 19. Vol. 18. No. 3. pp. 121–130. With 8 figs. [5 refs.]

The question of Egyptian splenomegaly and hepatic cirrhosis has long been a puzzle, and this paper is an interesting survey of the condition and its pathogeny as known at present. The early symptoms are often indefinite, though some 16 per cent. of patients give a history of diarrhoea at the onset of illness. By the time the patient comes under observation the liver and spleen are enlarged, firm and, perhaps, tender, while general symptoms of anaemia, loss of weight and recurrent attacks of fever are usually in evidence. Splenectomy in certain cases effected a marked improvement, but no explanation was forthcoming. More recently investigations were undertaken to determine the incidence and nature of bilharzial cirrhosis, and an extraordinary prevalence of enlarged cirrhotic livers and spleens was noticed among the patients examined, but those showing the cirrhosis most did not reveal signs of advanced bilharzial disease; in fact, ova in the faeces might be few or absent. The author then advised that splenectomy should be performed on such patients and that at the operation a small portion of the

liver should be excised for microscopical examination. This was done, and in each of five cases to date the characteristic ova have been found. If the disease has existed for a long time the ova may not be seen. In the part of the paper dealing with the pathology explanation is given of the failure to find ova in old-standing cases and of the causation of the two different types of cirrhosis found. The ova wander in the liver tissue leaving a trail of destruction with subsequent inflammatory reaction; giant-cell formation occurs in the new connective tissue and the ova are completely enveloped and in time the majority disappear. The type of cirrhosis apparently depends on the number and rate of deposition of the ova. If, as is more usual, the numbers are small and deposited over a considerable period, the diffuse form of cirrhosis (multilobular) is set up; if very numerous, they accumulate round the portal vessels, producing dense periportal (pipe-stem) fibrosis.

Enlargement of the spleen is an early symptom and often transient in *S. haematobium* infection, but progressive and lasting when accompanying the hepatic lesions of *S. mansoni*; and we must now recognize that in the latter, particularly, the symptoms of peripheral inflammation may be subordinate to progressive disease of the central viscera, in other words, "progressive enlargement and cirrhosis of the liver with splenomegaly occurs in patients with chronic and often slight intestinal bilharziasis."

H. H. S.

Dye (William H.). **Schistosomiasis and Splenomegaly in Central Africa.** *Jl. Roy. Army Med. Corps.* 1924. Sept. Vol. 43. No. 3. pp. 161–181. With 15 text figs. [2 refs.]

This paper is an interesting and valuable contribution, not only to the solution of the problem of splenomegaly but also to the question of schistosomiasis generally in Central Africa. Topographical conditions are first briefly described and show how readily infection of molluscs by miracidia and of the inhabitants by cercariae is maintained. Next follows an account of the various molluscs indigenous to the district which might serve as intermediate hosts of schistosomes; experimental work led to the conclusion that the only intermediate host of *S. mansoni* is *Planorbis* sp. near *sudanicus*, Martens, and the natural intermediate host of *S. haematobium* is *Melania nodocincta*, Dohrn. The latter schistosome is present only as a slight infection, but the former is exceptionally severe in children and young adults owing to their habit of visiting the same place for defaecation and being thus constantly reinfected. *S. mansoni* infection is, therefore, the more important and is associated with great enlargement of the liver and spleen, but without anaemia. The author was, unfortunately, able to obtain permission for only one limited autopsy, but sections of the liver showed lateral-spined ova in enormous numbers; the spleen, however, showed none. Examination of those living in the surrounding villages demonstrated that the incidence of splenomegaly depended on the proximity to the breeding places of the molluscan hosts of the schistosome. Treatment by tartar emetic was carried out. Rectal administration, even in doses of 16 gr., led to temporary improvement only and had to be abandoned. Intravenously administered it brought about good results except in the later stages of the disease, when not only was there no improvement but the patients proved less tolerant of the drug.

In an appendix to the main paper a series of experiments is described to show the action of tartar emetic on the ova, miracidia and cercariae of *S. haematobium*. Their powers of resistance proved in this descending order and the parent worm, judging from clinical evidence, is probably least resistant of all.

H. H. S.

Hodson (V. S.). **Splenomegaly.** — *Jl. Trop. Med. & Hyg.* 1924. Sept. 15. Vol. 27. No. 18. p. 247.

A native boy was admitted to the Omdurman Civil Hospital with a spleen extending to 4 inches below the costal margin. As there was a history of recent fever quinine was given without effect on the spleen. Examination of the faeces showed ova of *S. mansoni* and treatment by tartar emetic was undertaken. Twelve months after admission the spleen had receded to ½ inch below the costal margin.

H. H. S.

Blacklock (D. B.) & Thompson (M. G.). **Human Schistosomiasis due to *S. haematobium* in Sierra Leone.**— *Ann. Trop. Med. & Parasit.* 1924. Aug. 2. Vol. 18. No. 2. pp. 211–234. With 1 plate & 4 text figs. [12 refs.]

This paper may be regarded as an addendum to a Report submitted to the Government of Sierra Leone relative to the prevalence of human schistosomiasis in the Protectorate. It deals first with a description of the cercaria of *S. haematobium*, the only type of the disease met with there. The measurements of the cercariae are shown to be of little value, the difference between the living and the dead being very marked, and also among the latter the variations are considerable, according to the nature of the fixing fluid. Next, the differential characters of the cercariae of the human schistosomes are briefly considered. The evidence on which the cercariae from Sierra Leone are identified as those of *S. haematobium* comprises : 1. The finding of only terminal-spined ova in the infected population. 2. Experimental infection of Physopsis with miracidia from terminal-spined ova and subsequent infection of a monkey with cercariae from one of these snails. 3. The incidence of infection of the Physopsis was found to be high, 42 per cent. in one water latrine. 4. Adult males, morphologically identical with *S. haematobium*, were recovered three months after experimental infection of guineapigs and monkeys.

Some interesting facts relative to the bionomics of Physopsis are given, showing that it is a mud and sewage snail, particularly the latter, so that proper latrine accommodation would probably result in a marked reduction of human infection. Also, it was found that the snail could survive for 14 days in mud in the shade when the water was gradually drained away. Cutting off the water for a few days in the infected areas, therefore, would have but little effect on the human incidence-rate.

H. H. S.

Sharp (N. A. Dyce). **Schistosomiasis in Nigeria.**— *Jl. Trop. Med. & Hyg.* 1924. Sept. 15. Vol. 27. No. 18. p. 247.

Amoebic dysentery is said to be common in Nigeria, but the majority of patients presenting themselves with symptoms of passage of blood and mucus in the stools proved to be cases of rectal schistosomiasis.

Also, when examining faeces for incidence of ankylostomiasis, the author found ova of *S. mansoni* in 4 per cent. of apparently healthy prisoners. A short course of emetine and magnesium sulphate clears up the symptoms temporarily, but intravenous injections of tartar emetic bring about a cure after a total of 15–25 gr. has been administered.

H. H. S.

de Almeida (Elpidio). **A eschistosomose mansonica na Parahyba.**— *Brazil Medico.* 1924. May 31. Year 38. Vol. 1. No. 22. pp. 307–308.

More than six years ago the author directed attention to the prevalence of *Schistosoma mansoni* in the country, some of the northern States showing over 30 per cent. infection. Little if anything remedial has been done, with the result that in Parahyba there is heavy infection, particularly in three large foci, namely Guarabira, in which nearly all the inhabitants live near the dam and the majority are carriers of infection; Alagõa Grande, where the margins of the lagoon close to the town are swarming with *Planorbis centrimetralis*; and Campina Grande. The dwellings are not provided with latrines and the faeces are deposited in the water and nearly all the snails are infected. Dissemination is favoured by the warm climate.

H. H. S.

Blacklock (B.) & Thompson (M. G.). **Observations on the Classification of Certain Schistosome Cercariae.**—*Ann. Trop. Med. & Parasit.* 1924. Aug. 2. Vol. 18. No. 2. pp. 235–237. [4 refs.]

The authors note an obvious misprint in the legend to one of the figures of *S. mansoni* in Khalil's paper on the morphology of *S. mansoni* [this *Bulletin*, Vol. 20, p. 220], where the name *S. haematobium* appears by mistake. They draw attention to the fact that the most recent studies of *S. haematobium*, *S. mansoni* and *Cercaria indica* XXX disclose no constant morphological character nor staining reaction by which they can be singly distinguished, nor does separation appear possible by means of intermediate hosts on present knowledge, for we do not know if *S. haematobium* can parasitize *Oncomelania* nor if *S. japonicum* can develop in *Planorbis* or *Bullinus* spp.

R. T. L.

Faust (Ernest Carroll). **The Reactions of the Miracidia of** *Schistosoma japonicum* **and** *S. haematobium* **in the Presence of their Intermediate Hosts.**—*Jl. Parasit.* 1924. June. Vol. 10. No. 4. pp. 199–204. With 1 plate. [5 refs.]

Whereas the freeswimming miracidia of *S. japonicum* move about in the top stratum of water and thus only attack those molluscs in this layer, the miracidia of *S. haematobium* are equally distributed throughout the water in which they are hatched and are thus liable to attack all the snails in the immediate vicinity. This difference is an adaptation to the habits of the different intermediate hosts. On the ground of host relationship the author discards Sewell's suggestion that the cercaria found by him in a Planorbid in Calcutta was probably the

larva of *S. japonicum*. The attraction of the mollusc for the miracidium is a chemotactic phenomenon and lies in the mucous secretion. Although the host-parasite mechanism is based on a precise adjustment, the miracidium is capable of a very wide accommodation as regards temperature and H-ion concentration.

R. T. L.

Bettencourt (A.). **Action de l'eau savonneuse sur le miracidium et la cercaire du** *Schistosoma haematobium*.—*C. R. Soc. Biol.* 1924. June 27. Vol. 91. No. 22. pp. 226–230. [4 refs.]

Connor and Anderson have noted the lethal action of soapy water on the bilharzia miracidium, but this is not in accord with the known facts regarding the spread of the disease at Tavira. Here the water contains mineral salts which precipitate soap and render it more or less innocuous. Laboratory experiments are detailed which show that soap does markedly affect the miracidia, but that this action is lessened by mineral salts; the soap in the waters at Tavira does not attain the strength used in experiments and this explains the infestation of the intermediate hosts there. In soapy solutions of 2, 1 and 0·5 per 1,000 the cercaria survives from 2 hours 5 minutes to 3 hours 30 minutes, a shorter period than normal but more than sufficient to allow the organism to penetrate the definite hosts.

R. T. L.

Christopherson (J. B.). **The Prophylactic Treatment of Bilharzia Disease.**—*S. African Med. Rec.* 1924. July 26. Vol. 22. No. 14. pp. 335–337.

The ideal prophylaxis of the disease bilharziasis would be to attack the parasite at all four periods of its life cycle at the same time. (1) The *worm* in the human host; by antimony. (2) The *snail*; by destruction methods. (3) The *cercaria*; by the application of sound hygienic principles. (4) The *ovum* (in faeces and urine); by the adoption of healthy sanitary regulations. Bilharzia could be banished from a restricted focus like Santa Luzia (Tavira) in Portugal in a month or two.

The author gives reasons for advocating the use of tartar emetic in attacking the infection in Egypt. "The Mohammedan urinates and defaecates near water to carry out *Koranic law*, and uses the water for ablutions. . . . The snails are very widely distributed, and, although readily destroyed by desiccation, easily re-establish themselves, recruited from the inexhaustible Nile."

R. T. L.

Christopherson (J. B.). **The Prophylactic Treatment of Bilharzia Disease (Schistosomiasis).**—*Jl. State Med.* 1924. Aug. Vol. 32. No. 8. pp. 367–381. [20 refs.]

An interestingly written summary of modern knowledge as to prophylaxis of schistosomiasis, showing how the cycle of development of the worm may be broken and how the same measures will not be equally successful in all places owing to religious prejudice, insanitary practices, agricultural customs, and, in the case of *S. japonicum*, the existence of reservoir hosts. Efficient treatment of patients with tartar emetic injections naturally occupies an important position in prophylaxis.

H. H. S.

CHRISTOPHERSON (J. B.). **The Treatment of Bilharzia Disease.**—*Lancet.* 1924. May 24. pp. 1071–1072.

This article gives very clearly the details of the modern treatment of bilharziasis. The technique of intravenous administration of antimony tartrate is described minutely, together with an account of the contra-indications to the employment of the drug and of the signs of intolerance. Treatment should not be given to all cases indiscriminately; general debility, from whatever cause, and serious cardiac and renal disease contraindicate its use. Emetine, given also intravenously, comes second to antimony, in doses of 1½ gr. fifteen to twenty times in 6–8 weeks. Not only is it less effective, however, but there are risks of cardiac trouble and peripheral neuritis from the large doses which are needed. Unfortunately there are no laboratory tests to determine when sufficient antimony has been given. The best is the microscopic appearance of the ova passed, but this does not disclose the condition of the parent worm. Experience is, therefore, at present the only guide, and occasionally the worms have proved resistant to as much as 30 grains. When this is the case the injections should be suspended and a second course administered after an interval.

H. H. S.

SMITH (Norman Fairbanks). **Urinary Bilharziasis. A Campaign of Diagnosis and Treatment in Dongola Province, Sudan, November, 1921, to March, 1924.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1924. Mar. 20 & May 15. Vol. 18. Nos. 1 & 2. pp. 50–56. [2 refs.]

During tours of inspection in the Dongola province the author and native Sudanese assistant medical officers administered ten thousand injections of tartar emetic to 740 cases of urinary bilharziasis. Of these, 520 were re-examined up to 2¼ years after treatment and 5·4 per cent. were still found to be infected; 10 out of 28 had, however, abandoned treatment prematurely. Only 3·5 per cent. of those who received a full course are now infected. The possibility of the occurrence of antimony-resistant patients is suggested.

R. T. L.

CAWSTON (F. G.). **Treatment of Bilharziasis.** [Correspondence.]—*Brit. Med. Jl.* 1924. Aug. 16. p. 299.

The author has treated a large number of cases of schistosomiasis with intravenous injections of antimony. He finds that the potassium salt is less painful than the sodium and that less of the drug is needed. Whereas 20–30 gr. of the latter are required to bring about a cure, 18 gr. of the former is sufficient for adults, and for persons below the age of 18 years only one grain for each year of age is necessary. The injections were given over a period of 28 days, starting with ½ gr. and never exceeding 1½ gr. Although he has given over 1,700 injections in 5½ years he has seen no ill effects from the use of the drug. The curative dose of the potassium salt, he states, appears to be the same as that of emetine and, as the latter is administered intramuscularly, it may be employed in preference to antimony intravenously.

H. H. S.

Lasbrey (F. O.) & Coleman (R. B.). **Treatment of Bilharziasis by Antimony Tartrate.**—*Brit. Med. Jl.* 1924. May 24. pp. 907–908.

The authors have treated by antimony tartrate intravenously 4,655 patients, since 1919, at the Church Missionary Society's Hospital, Old Cairo. For adult males the initial dose they give is a grain, increased by ½ gr. daily to a maximum of 2½ gr. Injections are given each day for six days, then on alternate days, to a total of 12 injections, or 27 gr. By this time only "dead" ova are found on repeated examination, and the patients are recorded as cured. In-patient treatment has proved more satisfactory than out-patient, and the mortality is now only 4·9 per mille. Patients with surgical complications receive some six injections prior to operation, and the subsequent improvement is much more rapid than when these are omitted.

H. H. S.

Scott (D. S.). **Treatment of Bilharziasis by Rectal and Vesical Injections of Tartar Emetic.**—*Tanganyika Territory Ann. Med. Rep. for the Year 1922.* (Appendix No. VII.) pp. 92–94.

The author has treated seven cases of schistosomiasis by means of tartar emetic administered rectally after a soap and water enema, or into the bladder after micturition. He now gives 20 gr. for a dose on alternate days, but to the first patient with *S. mansoni* infection 10, 15, and 20 gr. were given with a day's interval between, and the disease was apparently cured. Others were more refractory. To one was given in all 100 gr. per rectum, to another 100 gr. by the bladder, but ova still continued to pass. To the former was then administered two doses, each of 25 gr., by the bladder, to the latter the same doses per rectum, and in each case the ova disappeared. The patients were discharged as cured if no ova were seen in the urine examined on three successive days. [That this is not a safe criterion is evidenced by the fact that one patient is stated to have had a relapse after 16 days.]

H. H. S.

Petzetakis (M.). **Essai de traitement de la bilharziose par le chlorure de calcium en injections intraveineuses ou son association avec l'émétine ou le tartre stibié.**—*C. R. Soc. Biol.* 1924. June 27. Vol. 91. No. 22. pp. 159–162. [1 ref.]

For several months chloride of calcium has been used systematically in the treatment of a considerable number of cases of vesical bilharziasis at the Greek Hospital at Alexandria. Intravenous injections are given of a 10 per cent. solution in doses 0·5 to 1 gm. at a time daily for ten days and then every second day for ten additional doses. This procedure in cases with living eggs in the urine and slight cystitis gives excellent results and brings about the disappearance of the haematuria, a diminution in the number of eggs, and later their disappearance also in the bulk of cases. In old cases, where the eggs are calcified, and there is advanced cystitis with sanguino-purulent urine, the effects are less satisfactory and inconstant and in very advanced cases the drug is ineffective. These results are comparable with those obtained by emetine and tartar emetic, and the author recommends a combination of calcium chloride with these courses.

R. T. L.

Christopherson (J. B.). **Tartar Emetic in Bilharziasis.** [Correspondence.]—*Lancet.* 1924. June 7. p. 1184.

In this letter relative to priority in the employment of antimony intravenously in the treatment of schistosomiasis, the author directs attention to his article on the Antimony Treatment of Bilharziasis published in the *Journal of Tropical Medicine and Hygiene*, June 17th, 1923 [this *Bulletin*, Vol. 20, p. 943].

H. H. S.

Meleney (Henry Edmund). **The Intermediate Host of *Schistosoma japonicum* in China. III. Further Observations on its Distribution.**—*China Med. Jl.* 1924. June. Vol. 38. No. 6. pp. 481–485. [3 refs.]

Further investigations have led to the discovery of *Oncomelania hupensis*, the intermediary of *S. japonicum*, on the shore of Tung T'ing Lake, in the region of Hankow, at Anking and at Pukow. Each locality was found to have its own epidemiological features and clinical cases of schistosomiasis. The seed-bed in which rice is sown is often the source of infection among the farmers. It is noted that the shells vary in different regions and that those from the Tung T'ing Lake are the largest and hardest, with the vertical ridges marked prominently, while below Hankow the shells become more frail. The shells from around Soochow have still smaller ridges and are in general frail and shorter. The slight markings upon the Japanese shells bear out the supposition that the two geographical species belong to the same genus.

R. T. L.

Meleney (Henry Edmund) & Wu (Hsien). **The Blood Serum Globulin in Schistosomiasis Japonica.**—*China Med. Jl.* 1924. May. Vol. 38. No. 5. pp. 357–361. [5 refs.]

A marked increase in blood-serum globulin has been shown to occur in active cases of kala azar. The authors have now shown that in infection by *S. japonicum* there is an equally high percentage of the globulin. For purposes of diagnosis, therefore, in districts where both these diseases are endemic, as in the Yangtse Valley, the globulin precipitation test needs to be very cautiously interpreted. It was found also that treatment of *S. japonicum* infection by tartar emetic led to a steady decrease in the intensity of the reaction, the result becoming negative with the disappearance of clinical symptoms. The test thus appears to constitute a valuable indication of the progress and success of treatment.

H. H. S.

Strugnell (L. F.). **Notes on Schistosomiasis in the Yangtse Valley.**—*Jl. Roy. Nav. Med. Service.* 1924. July. Vol. 10. No. 3. pp. 221–224. With 1 chart in text.

An account is given in some detail of two cases, on H.M.S. *Bee*, of infection by *Schistosoma japonicum* contracted on a shooting expedition in the Yangtse Valley. Exposure to infection occurred 43, 42 and 28 days prior to the onset of symptoms and, on the analogy of previous cases from the same district, the last was probably the actual day of infection. The onset of symptoms was fairly abrupt and the

course of fever, lasting for some six weeks, was of the usual type. The primary rise of temperature is ascribed to "maturity of the parasite and the commencement of egg-laying" and the secondary rise, beginning on the 7th to 10th day, to "inflammation set up . . . by the general distribution of eggs and their lodgment in the various organs." The prognosis is good, since it is generally believed by Hankow practitioners that a single infection in a foreigner has not, as a rule, any sequelae.

H. H. S.

Tootell (George T.). **A Preliminary Survey of Schistosomiasis Infection in the Region of Changteh.**—*China Med. Jl.* 1924. Apr. Vol. 38. No. 4. pp. 270–274.

Laboratory records at Changteh, Hunan, for the past seven years have shown that 1 per cent. to 2 per cent. of all stools examined contain ova of *S. japonicum*, frequently accompanied by the ova of one or more intestinal parasites. The patients usually came from districts from 17 to 33 miles distant and a visit showed that the endemic centres were two. [For reasons which are not apparent, the author "names" the towns by alphabet only.]

R. T. L.

Cullen (J. P.). **Case of Asiatic Schistosomiasis.**—*Proc. Roy. Soc. Med.* (Sect. Trop. Dis. & Parasit.). 1924. Aug. Vol. 17. No. 10. pp. 85–86. [1 ref.]

As *Schistosoma japonicum* has not been reported west of Singapore the author publishes notes of a case in a Chinaman aged 40 admitted to Namtu Hospital, Burma, whose previous history, so far as could be ascertained, was that "he had lived in Namtu for 3 years; preceding that he had resided for an indefinite period in the frontier village of Myitkyina in the Northern Shan States, and before that in the Chinese Province of Yunnan, which borders on the Northern Shan States."

R. T. L.

Skinner (A. H.). *Schistosoma japonicum*: **the Diagnosis of Early and Mild Infections.**—*Jl. Trop. Med. & Hyg.* 1924. May 15. Vol. 27. No. 10. p. 109. With 2 charts.

When infection with *S. japonicum* is slight and eggs are hard to find, "it is easy to rest content with a diagnosis of 'hepatitis' or 'paratyphoid,' where the symptoms are evidently abdominal and the fever is drawn out over a month or more." The clinical picture is really one of "subacute hepatitis." Clinical notes are given of two officers from one of H.M. gunboats who became infected while shooting at Tatung, on the Yangtse. The most important feature was liver tenderness, which with the blood picture and the type of temperature sufficed to settle the diagnosis.

R. T. L.

Meleney (Henry Edmund). "*Schistosoma japonicum* **Infection in an American Child.**" **(Termination of Case first reported by Dr. Logan in 1911.)**—*China Med. Jl.* 1924. Apr. Vol. 38. No. 4. pp. 274–276. [2 refs.]

The subsequent history of a case of *S. japonicum* infection contracted in China, probably in 1908, is recorded. The patient had suffered at brief intervals from diarrhoea with the passage of mucus and blood.

In 1923, on account of an attack of acute abdominal pain in the right iliac region, laparotomy was performed and a gangrenous appendix found bound down by firm adhesions which were present throughout the whole abdominal cavity. There were also numerous calcareous deposits, about the size of a threepenny piece, scattered over the peritoneum. Death took place three weeks after the operation following two profuse haemorrhages from the bowel.

H. H. S.

Libby (W. E.). **A Further Study in Schistosomiasis Japonica.**—*China Med. Jl.* 1924. May. Vol. 38. No. 5. pp. 376–388. [1 ref.]

To a previous series the author adds notes of 18 cases of *S. japonicum* treated with tartar emetic. The ova disappear from the stool after from 4 to 10 grains. Cure is effected in mild cases and moderately severe cases improve. In severe cases, where there has been marked injury to the liver and spleen particularly, it will not stay the progress of the disease. If the drug is at all effective, this will appear when 20 grains in all have been given. The drug, from the author's experience, is more toxic than has been supposed. Beyond a total of 12 grains a lengthening of the intervals is recommended. Because the bulk of the cases come for help in the advanced stage, the autl or states that very little help can be expected in China from tartar emetic as a therapeutic agent.

R. T. L.

Tootell (George T.). **Tartar Emetic in Schistosomiasis Japonica.** — *China Med. Jl.* 1924. Apr. Vol. 38. No. 4. pp. 276–278.

The author treated with tartar emetic twenty-four patients suffering from Schistosomiasis japonica. The initial dose was, in most cases, 0·5 cc. of a 2 per cent. solution injected intravenously, increased, if no untoward symptoms arose, by 0·5 cc. daily till 5 cc. was given. When other intestinal parasites were present, these were dealt with first. Twelve were cured after an average stay in hospital of 38 days; 17 injections were found necessary. Seven improved; four who showed no amelioration did not continue the treatment for a sufficient length of time. One died of typhoid fever after being cured of his schistosome infection.

H. H. S.

Kawamura (Rinya), Kazama (Yoshiaki) Tanaka (Shyuji). [**On the Therapeutic Treatment of Schistomiasis Japonica.**] *Saikingaku Zasshi (Jl. of Bact.).* 1924. Feb. Nos. 336 & 337. [Summarized in *Japan Med. World.* 1924. June 15. Vol. 4. No. 6. pp. 132–133.]

Experimenting with infected guineapigs, rabbits, dogs, goats and monkeys, it was found that X-rays inhibited the development of the genital glands of the bilharzia worms but did not affect the adults. Stibnal and silver salvarsan acted only slightly and salvarsan and neo-salvarsan not at all. As emetine hydrochloride gave promising results it was afterwards tested on 13 human cases. In the first six the faeces improved within 2 or 3 days in slight cases and in 21 days in the more severe cases. After 18–21 injections the faeces ceased to show eggs. A similar improvement was noticed in the second series. The authors consider that emetine hydrochloride should be given "in a minimal dose of 0·016–0·0186 cc. per kilogram body weight and maximal doses of 0·032–0·72 cc."

R. T. L.

Kawamura (Rinya), Ohmori (Chizuka) & Tanaka (Shyuji). [**Further Notice on the Emetin-Treatment of Schistosomiasis Japonica, together with a Note on the Influence of Emetin-Treatment on the Blood Features.**]—*Tokyo Ijishin-Shi (Tokyo Med. News).* 1924. June. No. 2374. [Summarized in *Japan Med. World.* 1924. Sept. 15. Vol. 4. No. 9. pp. 238–239.]

Emetine has the same action on human cases of Japanese schistosomiasis as it was previously shown to have on experimental animals. It ameliorated the symptoms as well as being an anthelmintic. With maximum doses, "2·91 cc.," no cases showed ill after-effects. In patients suffering from severe anaemia or heart disease smaller doses should be administered.

R. T. L.

Meggitt (F. J.). **On the Collection and Examination of Tapeworms.**—*Parasitology.* 1924. July. Vol. 16. No. 3. pp. 266–268. [4 refs.]

The following method is recommended for collecting the smaller cestodes from the intestine. The gut is opened in short lengths of about 4 inches, and the piece removed and shaken in a flat dish filled with water at approximately 40°C. After being thus washed the intestine is removed to another similar dish and examined with a lens, and the adherent worms dissected out with needles. For rapid examination, placing in lactophenol is recommended, or clearing in clove oil after killing by immersion in hot absolute alcohol. Acetic acid carmine with 3 parts per cent. of saturated ferric acetate in glacial acetic acid is found to be the best stain for examining the genital organs, 5–30 minutes exposure to the stain, according to size, giving the best results.

For preservation the author prefers Zenker's fluid for not longer than 24 hours, with subsequent prolonged washing in running water. Bouin's fluid is not so satisfactory, and more washing is needed, but the material can be left in it for longer periods.

For permanent preparations Delafield's or Ehrlich's acid haematoxylin, or acetic alum carmine, have given equally good results.

H. H. S.

Riley (William A.). *Diphyllobothrium latum* **in Minnesota.**—*Jl. Parasit.* 1924. June. Vol. 10. No. 4. pp. 188–190. [8 refs.]

In Minnesota human infection with *Dibothriocephalus latus* appears to be frequent. 14 cases have come under the observer's notice in 5 years. Of these 7 were recorded in 1919, the others are now published for the first time, bringing the total number of recorded cases for Minnesota to 65; a total quite out of proportion with that for Taenia. At least nine of the cases are definitely known to have been acquired locally.

R. T. L.

Anderson (T. B. H.). **Report of a Case of** *Dibothriocephalus latus* (*Diphyllobothrium latum*).—*Public Health Rep.* 1924. May 9. Vol. 39. No. 19. p. 1074.

A brief record of a Swede, aged 31 years, who died of phthisis and septic pneumonia in New Mexico, is made because the patient was harbouring *Diphyllobothrium latum*, a rare condition in the United States. The author believes that infection had been acquired in early life in Scandinavia.

H. H. S.

Miyashita (Koho). [**On a Case of Parasitism of** *Diplogonoporus grandis* **Blanchard.**]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1924. Apr. No. 2363. [Summarized in *Japan Med. World.* 1924. July 15. Vol. 4. No. 7. p. 179.].

A sixth case of the rare parasite is recorded from man in Japan. The patient had eaten raw fish on occasion.

R. T. L.

Marjoribanks (R. M.) & le Sueur (Elizabeth J. O.). **A Case of** *Sparganum prolifer* **Infection. (Preliminary Note.)**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1924. Mar. 20 & May 15. Vol. 18. Nos. 1 & 2. p. 70.

A Chinese student age 22, who had been resident in Sarawak for ten months, is regarded as a patient suffering from this rare parasite, of which only two previous cases are on record. Symptoms of cough had been present for three months. The attacks occurred on alternate days, and during each two or three worms were coughed up. The larynx was normal, but with the laryngoscope a spongy patch could be detected below the left tonsil. This could be palpated and bits removed were found to contain small "Sparganum bodies." These varied in size from that of a pin's head to bodies 8 mm. by 6·5 mm. They were mostly bean-shaped with prominences on one side. When fresh, the bodies were cream coloured and of the consistence of soft cheese. Microscopically the contents were found to consist of a white granular material with food vacuoles and oily globules.

R. T. L.

Shimomura (Shiro). [**On the Destination of the Adult Worms of** *Sparganum mansoni*, **which had been introduced to the Animal Body by Non-peroral Route.**]—*Hifuka Kiyo* (*Arch. of Dermat.*). 1923. Nov. Vol. 2. No. 2. [Summarized in *Japan Med. World.* 1924. June 15. Vol. 4. No. 6. p. 134.]

Introduction per os of sparganum into rabbit, pig, guineapig, rat, chicken, pigeon and frog result in the development of adult forms. Their introduction into the urinary bladder, vagina, colon, similarly resulted in development into adult worms. The rabbit, which proved refractory to oral administration, proved similarly difficult to infect by non-oral routes, and even when adults were introduced into the stomach or intestine they did not survive.

R. T. L.

Hill (Rolla B.) & Sanchez (Augustin). **The Presence of** *Hymenolepis nana* **in Porto Rico.**—*Jl. Amer. Med. Assoc.* 1924. Sept. 6. Vol. 83. No. 10. p. 766.

Hymenolepis nana has not been recorded previously in Porto Rico. Among 47 inmates of the boys' orphan home in Hatillo, the eggs of this cestode were found in the stools of three ranging in age from 10 to 12. Carbon tetrachloride did not remove the parasites, but success followed the administration of oleoresin of aspidium 1 gm. in divided doses preceded for 24 hours by a milk diet and followed in two hours by magnesium sulphate.

R. T. L.

Nanavutty (Sohrab H.). **The Existence of** *Hymenolepis nana* **Infection in India.**—*Indian Jl. Med. Res.* 1924. July. Vol. 12. No. 1. pp. 179–180. With 1 text fig.

This note deals with 2 cases of *H. nana* from Northern India. [The author erroneously states that this infection has not previously been described from India.]

R. T. L.

Luney (F. W.). **Cysticercus of** *Taenia solium* **in Human Brain.**—*Canadian Med. Assoc. Jl.* 1924. Feb. Vol. 14. No. 2. p. 143.

The case, briefly described, is of interest on account of the resemblance of the symptoms to those of "nervous syphilis." There were some illusions and hallucinations and complaints of electrical sensations in feet and hands. Neurological examinations gave the following :—

Ataxic ; marked Rombergism ; knee jerks greatly diminished, pupils sluggish to light and accommodation ; paraesthesia of hands and feet ; grip of right hand very weak. Latterly the patient had two epileptiform seizures with frothing at mouth and diffuse clonic convulsive movements on the right side, and he died some days later. At the autopsy one *Cysticercus cellulosæ* lay superficially beneath the arachnoid on the under surface of the right frontal lobe ; flattened out ; elongated and in apposition with optic nerves and right olfactory nerve ; three other cysts were found in the subarachnoid space, deep in the sulci on the upper surface of the right cerebral hemisphere in front of the fissure of Rolando, and a fourth cyst occurred in the same region on the left side of the brain. After marriage the patient had a genital sore, but there was no subsequent history of secondary syphilis.

R. T. L.

Mills (Ralph G.). **Notes on the Occurrence of** *Taenia solium* and *Cysticercus cellulosae* **in North China.**—*China Med. Jl.* 1924. June. Vol. 38. No. 6. pp. 465–471. With 1 fig. [6 refs.]

Three instances are recorded from North China of somatic taeniasis ; two in pork and one in man. The history of human infection extended over at least twelve years.

R. T. L.

Trenti (Enrico). **I metodi biologici nella diagnosi dell' echinococcosi umana. L'intradermoreazione precoce.**—*Policlinico.* Sez. Med. 1924. July 1. Vol. 31. No. 7. pp. 353–366. [25 refs.]

The author has carried out intracutaneous, subcutaneous and complement-fixation tests, noting the early and delayed reactions of the former, on 70 healthy persons and on 21 suffering from hydatid infection, in order to arrive at the value of each test and the relative values of the three for diagnostic purposes.

He finds that in persons free from hydatid the fluid obtained from human cysts, in quantities of 0·3 cc. injected intracutaneously, may give rise to a positive result ; that with less than 0·3 cc. the results are negative, as they are also with 0·3 cc. of hydatid fluid from sheep. With definite hydatid cases 0·1 cc. of human fluid, similarly injected, gives a positive reaction in the majority of instances, 18 out of 21. As regards the other tests, the next in order of reliability is the subcutaneous, and the last is that of complement fixation, in which only

half the cases proved positive. In one, in whom the complement fixation was positive and the intracutaneous negative, operation revealed a neoplasm of the liver, but no hydatid. [It is possible there may have been a cyst elsewhere, not discovered.]

H. H. S.

Goudsmit (J.). **Over de huidreactie bij echinococcusziekte.** [Skin Reaction in Hydatid Disease.]—*Nederl. Tijdschr. v. Geneesk.* 1924. Sept. 6. Year 68. 2nd Half. No. 10. pp. 1235–1240. With 1 text fig. & 1 plate. [7 refs.]

The author describes a case of hydatid in the lung which was diagnosed by the intradermo-reaction of Casoni, and its presence confirmed by X-ray photograph. Weinberg's reaction was positive in this patient.

The author compares this case with two others who were suffering from hydatid infection proved subsequently by operation. In one, Weinberg's reaction was negative, and in the other weakly positive. Both, however, gave positive results with the Casoni reaction. From this the author points out the advantages of the latter test, remarking on its simplicity, reliability and absence of any ill effects on the patient.

For preparing the antigen the author advises that the Echinococcus fluid be extracted from the cyst by means of a sterile syringe and placed in sterile tubes; it is allowed to stand at room temperature for 5–6 days, and is then carefully examined for the presence of bacilli. The fluid should remain clear and a preservative (1/2 per cent. carbol) may be added; turbidity, which is due to bacterial growth, renders the fluid unsuitable for the test.

A good skiograph is given.

R. T. L.

Porter (F. J. W.). **A Unique Case of Hydatid of the Liver.**—*Indian Med. Gaz.* 1924. Sept. Vol. 59. No. 9. pp. 459–460.

There was a very large swelling of the abdomen in a male Hindu, aged 40, which was said to have begun 20 years previously. Amongst those who saw him chronic tubercular peritonitis was the favourite diagnosis. On incision under spinal analgesia a bucketful of daughter cysts was evacuated. The whole cyst was outside the peritoneal cavity. There was a large hole leading into a cavity in the liver which was lined in places with calcareous material. The cyst appeared also to have burrowed into the pelvis between the parietal peritoneum and the abdominal parietes. 72 days after the operation the wound had finally healed.

R. T. L.

Kosuge (I.). **Wie weit wirken bei dem Eindringen von Strongyloides-larven und anderen parasitischen Nematoden in das Gewebe spezifische Reize ?** [To what Extent do Specific Stimuli assist in the Penetration of Tissues by Strongyloides Larvae and other Parasitic Nematodes ?]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. May. Vol. 28. No. 5. pp. 179–187. [9 refs.]

The author carried out two groups of penetration experiments with Strongyloides and other larvae, with a view to deciding whether, and to what extent, such forces as thermotaxis and histotropism took part. (1) At room temperature, penetration occurred in one minute through thin blotting-paper, thick smooth blotting-paper, and Japanese

paper, but not through thick note-paper. (2) Through a single layer of thin linen (handkerchief) they passed in half a minute, through a double layer in a minute. In each case the surface was moistened, and there was water on the under side. (3) With thin slices of uncooked potato there was no penetration, nor through plant leaves (*Fuchsia hybrida* and *Sparmannia africana*). (4) Penetration occurred after five minutes through a slice of apple 1mm. in thickness, but not through 2 mm. even after an hour.

A second group of experiments was performed with animal tissues. Histotropism is only advantageous when it takes place in a host in which development is to proceed further: in fact, this is histotropism in its proper sense. (1) Goodey's method was carried out in a fragment of frog's skin and also on the skin of a living frog at a temperature of 30° C. Larvae of Strongyloides were applied twice at an interval of 15 minutes, and after an hour the surface was carefully cleansed and 51 sections were made. In 19 of these larvae were found—6 in the epidermis, 27 in the upper corium, 10 in the lower layer, 7 at the junction of corium and the subcutaneous layer, and 6 in this layer itself. Larvae were also found in the stomach and lungs. (2) A guineapig was killed and left at room temperature for two hours. Larvea were then applied and the animal placed at 37°C. for five minutes. The larvae had penetrated to the subcutaneous tissue; in other words, they passed from the warmer atmosphere to the colder tissue, the reverse of thermotaxis. (3) Further experiments on the living mouse, and on tissue of the human umbilical cord, with larvae of *Strongyloides stercoralis* and Strongyloides from a monkey showed that these, and also the larvae of *Angiostomum nigrovenosum* from the frog, would penetrate the mouse's skin, but the author was unable to confirm Brumpt's hypothesis of a definite histotropism; in fact, he showed that even larvae of free-living nematodes would penetrate human umbilical tissue.

H. H. S.

Hasegawa (Takuzo). [**On the Filarial Larvae of the** *Strongyloides stercoralis* **outside the Host's Body.**]—*Tokyo Ijishin-shi* (*Tokyo Med. News*). 1924. June. No. 2373. [Summarized in *Japan Med. World*. 1924. Sept. 15. Vol. 4. No. 9. p. 238.]

At a temperature of 7°–11° C. the rhabditiform larvae of Strongyloides metamorphose into the filariform stage in 24–30 hours after leaving the body of the host, while at 30°–37° C. they became free living mature forms in 25 to 37 hours.

R. T. L.

Cilento (R. W.) & Richards (R. E.). **Filariasis in Australia.**—*Med. Jl. Australia.* 1924. May 17. 11th Year. Vol. 1. No. 20. (Supplement) pp. 325–327.

As the result of a systematic examination for filarial infections in Australia it is noted that in Townsville there appears to be a seasonal variation in the prevalence of positive findings of microfilaria in the night blood, the percentage dropping considerably in winter. In the Lismore area of northern New South Wales filaria was not detected, and it is probably very mildly endemic if it exists now at all. In Brisbane 5·7 per cent. occurred in 877 examinations of both sexes and all ages. At Ipswich the rate was 3 per cent. At Maryborough 2·5 per cent. were positive, but here the rate rose to 4·6 per cent. when

the hospitals and schools were included, giving a final figure of 3·8 per cent. for 105 persons. No case occurred in 26 slides at Gympie. At Bundaberg 3 cases were noted in 43 persons, but of these three only one had lived all his life there. At Rockhampton the rate was 3 per cent., while inland at Longreach and elsewhere no case occurred. In Proserpine 3·5 per cent. and Bowen 1·5 per cent. was noted. At Ayr the percentage was determined as 1·4. Practically speaking, the distribution of filariasis in Australia is confined to a narrow strip from the northern rivers of New South Wales to Cape York and including the south eastern corner of the Gulf of Carpentaria. The vector is *Culex fatigans*.

R. T. L.

Cilento (R. W.). **Filariasis ; with Especial Reference to Australia and its Dependencies. A Review and Compilation.**—*Commonwealth of Australia Dept. of Health Service Publication (Tropical Division) No.* 4. [1923.] 78 pp. With 14 figs.

This "Service Publication" of the Department of Health of the Australia Commonwealth is described as a review and compilation, and, as such, provides in readily accessible form, for the assistance of medical practitioners in Australia and its tropical dependencies, a comprehensive summary of modern knowledge of "Filariasis" in its various manifestations as well as of the structure, life history of the *Filaria bancrofti* and of its vectors in those regions. A number of useful illustrations are copied which in some cases lack due acknowledgment.]

R. T. L.

Walker (Mavis J.). **Some Observations on the Transmission of *Filaria bancrofti* in Queensland.**—*Australian Jl. Experim. Biol. & Med. Sci.* 1924. June 16. Vol. 1. Pt. 2. pp. 39–45. With 7 figs. [3 refs.]

The four most abundant species of mosquitoes in Queensland are :—(1) *Culex quinquefasciatus* (=*fatigans*). (2) *C. annulirostris*. (3) *Aëdes vigilax*. (4) *A. aegypti* (=*Stegomyia fasciata*).

At first engorged mosquitoes were collected at random in Brisbane, but none was found infected. Experimentally *C. quinquefasciatus* was found to be a very efficient host and became infective in very hot weather 9½ days after feeding but usually after 11–16 days. In *C. annulirostris* partial development usually but exceptionally complete development occurred. *Aëdes vigilax* is inefficient and only partial development occurs, while in *Aëdes aegypti* no development could be induced.

R. T. L.

Guérin (F. H.). **Enquête sur la filariose en Cochinchine.**—*Bull. Soc. Path. Exot.* 1924. May 14. Vol. 17. No. 5. pp. 397–405. [3 refs.]

Filarial infection is much more intense in Cochin-China than previous medical communications would lead one to suppose. The presence of large numbers of heavily infected Chinese, Hindus, Antilleans, etc. during the past fifteen years would appear to be responsible for this, combined with the high and even temperature which favours the larval

development. The filarial index in 340 prostitutes examined in a two year investigation in Saigon is 4-7 per cent., a figure comparable to that obtained by MATHIS and LEGER for the inhabitants of the Tonkin Delta. The microfilariae are irregular in their appearance in the night-blood and in 10 out of the 16 positive cases obtained occurred in those in perfect health. Of the remaining 6, one had superficial lymphatic varices of the lower limbs with some elephantiasis of the labia majora ; one had adenolymphocele ; two had lymphangitis of the arm and forearm with swelling of the sub-epitrochlear gland ; one had lymphangitis of the thigh, and one chyluria.

R. T. L.

LE CHUITON (F.). **Recherches sur l'épidémiologie de la filariose (*Filaria Bancrofti* Cobbold, 1877) en Cochinchine.**—*Bull. Soc. Path. Exot.* 1924. May 14. Vol. 17. No. 5. pp. 405–409. [2 refs.]

The filarial index of 84 sailors of the " Caserne des Marins " is 15·47 per cent. As the limits of variation of the temperature in Cochin-China are from 25° to 37°C. the author has experimentally ascertained if *Culex pipiens*, the most prevalent mosquito with Stegomyia, in Cochin-China served as host. In four series of experiments, viz., one at 27°, two at 35° and one at 37°C. the larva had reached the last stage of development at the end of ten days and 24 hours later could always be found in the proboscis. 27°C. appears to be the optimum temperature, and this is the average temperature of the different months of the year in Cochin-China, except in December and January, the coldest months, in which it is 25° to 26°C., and in April and May, the warmest, when it is 29°C. to 30°C.

R. T. L.

BÄR (H. G.). **Beschouwingen over de behandeling van Filariasis met tartarus emeticus, met beschrijving van een geval van vergiftiging.** [Remarks on the Treatment of Filariasis with Tartar Emetic with Description of a Case of Intoxication.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 2. pp. 317–323. [6 refs.]

Bär reports favourable results of tartar emetic treatment of filariasis with doses not exceeding 100 mgm., controlled by observation on urine and subjective feeling of the patient. The acute attacks of lymphangitis with fever are either stopped or their frequency is much diminished by this treatment. A case of poisoning is described in a woman, aged 47, after 9 injections, containing together 755 mgm. tartar emetic (highest single dose 100 mgm.). The most marked symptoms were the sore mouth and an acute nephritis, with nearly complete anuria during 5 days. The patient recovered.

W. J. Bais.

CILENTO (R. W.) & O'NEILL (V. F.). **An Unusual Case of Filariasis with Post-Operative Tetanus.**—*Med. Jl. Australia.* 1924. May 10. 11th Year. Vol. 1. No. 19. pp. 462–464.

A woman, aged 30 years, suffered from elephantiasis of the right leg and exhibited also symptoms of chronic salpingitis and uterine misplacement. An operation was performed and filariasis of the broad ligament was found. Shortly afterwards an acute bronchitis supervened, which was treated, *inter alia*, by linseed-meal poultices. Some of the meal

contaminated the operation wound. On the eighth day after operation signs of tetanus appeared, and the attack was a fairly severe one. The patient recovered in three weeks, having received in all 231,000 units of anti-tetanic serum, subcutaneously, intramuscularly, intravenously and intrathecally. The last route appeared to yield the best results. The linseed was regarded as the source of infection, since it came from India, "where tetanus is rife and where the conditions of its preparation are extremely insanitary."

H. H. S.

Matheson (Farquhar). **Elephantiasis of the Arm.**—*New Zealand Med. Jl.* 1924. Aug. Vol. 23. No. 116. p. 331. With 1 plate.

A short account is given of elephantiasis of the right arm and leg of a Samoan woman, aged 36 years. The condition had been present for ten years but had increased rapidly during the last six. From the arm a mass weighing 43 lbs. was removed. There was no shock and healing was uneventful. A second case is referred to in which a man had so large an elephantoid mass that he "required the assistance of two men to carry his arm in a piece of sacking when he wished to walk."

H. H. S.

Rodriguez Rivero (P. D.). [**Contribución al estudio de la Elefantiasis arábiga en Venezuela.**]—*Tercer Congreso Venezolano de Medicina, Valencia* 23 *bis* 28 *Juni* 1921. Caracas 1921. Tipografia Americana. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1924. May. Vol. 28. No. 5. p. 213.]

The original paper is described in the summary as a detailed work on elephantiasis, its causes, operative treatment, etc. Chyluria, lymphocele, elephantiasis and other conditions ascribed to *Filaria bancrofti* are met with in Venezuela, but the embryos were not found even after prolonged search. These so-called "filarial conditions" are more correctly to be regarded as "filarial sequelae," the direct cause being bacterial infection. [The same point was insisted upon in the report of the Commission under Professor Leiper sent from the London School of Tropical Medicine to British Guiana in 1921.]

H. H. S.

Stenhouse (H. M.). **The Kondoleon Operation and Filariasis.**—*U.S. Nav. Med. Bull.* 1924. June. Vol. 20. No. 6. pp. 715–716. [4 refs.]

The author regards the absence of filaria embryos from the peripheral circulation in cases of elephantiasis as indicating the efficiency of nature's protective mechanism against them, and asks whether the protective wall should be broken down or new avenues opened up "by which injurious parasites might again enter the general circulation." He then goes on to say that he has performed Kondoleon's operation on several cases and is convinced of its beneficial effects and satisfactory results.

H. H. S.

Blanchard (M.) & Laigret (J.). **Recherches sur la transmission d'*Onchocerca volvulus* par divers parasites hématophages.**—*Bull. Soc. Path. Exot.* 1924. May 14. Vol. 17. No. 5. pp. 409–417. [4 refs.]

As "Filarial itch" does not occur in foci of intense infestations with *Onchocerca volvulus* in the Congo the theory that the life history of this parasite may resemble that of the guinea-worm and that as a result of scratching the embryos may be liberated from the skin does not appeal

to the authors. They have consequently experimented with numerous biting insects to discover the true intermediary. By these the embryos disseminated in the skin are taken up and with *Ornithodorus moubata* this is particularly the case. In *Cimex lectularius* the embryos are few and infrequent. No development occurred in any of the experiments. The authors consider that ticks are useful for obtaining the larvae from the skin and are less repugnant to the patient than the method of slicing off the skin surface, but the danger of conveying tickfever to the unfortunate subject cannot be ignored and such an accident followed one of the experiments recorded in the paper.

R. T. L.

Fairley (N. Hamilton) & Liston (W. Glen). **Studies in the Transmission of *Dracunculus medinensis*—a Negative Experiment. Part II.**—*Indian. Jl. Med. Res.* 1924. July. Vol. 12. No. 1. pp. 93–104. [18 refs.]

Until dracontiasis has been conveyed to man or animals by experimental methods on a larger scale, and with more uniform results than hitherto, the theory of Cyclops transmission can only be expressed in terms of high grade probability, according to the authors. In view of Liston's previous failures to infect *Macacus sinicus* with cyclops containing infective larva of the guineaworm a new series of 22 monkeys were exposed to infection. Experiments are detailed, showing the lethal effect of the alimentary secretions on Cyclops. Churning action of the bowel is considered necessary mechanically to release the larvae from confinement in the exoskeleton of the dead cyclops. The larvae survive in gastric juice and acid concentrations exceeding the normal over one hour; in alkaline media with trypsin the survival time is over seven hours. In either case it is long enough to ensure penetration of the mucosa. Exhaustive experiments calculated to secure the infection of *Macacus sinicus* proved abortive and the conclusion that this species is immune would appear to be well grounded.

R. T. L.

Wright (R. E.). **Encysted Guinea-Worm of the Orbit.**—*Indian Med. Gaz.* 1924. Sept. Vol. 59. No. 9. pp. 458–459.

The author sent a specimen of an encysted worm, removed from the upper eyelid of a child in Madras, to the London School of Tropical Medicine, where it was identified as Dracunculus, and a suggestion was made that a brief record of the clinical aspect of the case would be interesting. The patient, a girl of 5 years, had left-sided ptosis, and a hard swelling in the lid, connected by a narrower part with another nodule situated posteriorly between the roof of the orbit and the eyeball. Incision was made and the degenerating coils, apparently partially calcareous, of an encysted worm were removed in two pieces, and the specimen forwarded to England.

H. H. S.

Stewart (H.). **X-Ray Photograph of a Guinea-Worm in the Popliteal Space.** [Correspondence.]—*Jl. Trop. Med. & Hyg.* 1924. May 15. Vol. 27. No. 10. p. 120. With 1 fig.

An excellent skiagram shews a calcified guineaworm in the popliteal space in a case clinically diagnosed as "chronic arthritis."

R. T. L.

Le Roy des Barres. **L'ascaridiose chirurgicale.**—*Far Eastern Assoc. Trop. Med. Trans. Fifth Biennial Congress, Singapore,* 1923. pp. 447–481.

This paper recounts the very varied lesions and symptoms which have confused the physician in the past and surprised the surgeon and which have been attributed to *Ascaris lumbricoides.* [It is highly regrettable that such a valuable résumé should lack a bibliography giving detailed references to the numerous sources of information quoted in the text.]

R. T. L.

Fanconi (G.). **Die Askariden als Krankheitserreger.**—*Schweiz. Med. Woch.* 1924. May 8. No. 19. pp. 434–437. [13 refs.]

Three cases are recorded by the author, together with two others taken from the literature, relative to disease associated with the presence of Ascarides in the body. The earlier symptoms produced are rise of temperature, catarrh, cough, bronchitis and, in some instances, urticaria with high eosinophilia. These are possibly due to the migration of larvae from the intestine *via* the blood stream to the lungs. After a varying interval much graver signs may appear. In the author's first case, a child of 16 months, there were acute vomiting and profuse diarrhoea, during which 450 ascarides were passed by the bowel, mouth and nose, and also meningitic symptoms—stupor, rigidity and opisthotonus (Pseudoméningite vermineuse of French authors). These later symptoms are due in part to mechanical irritation, in part to toxic products.

A brief summary is given of Flury's analysis of the toxins obtained from Ascaris, and the author, by injecting subcutaneously 0·2 cc. of a watery extract of ascarides into a child of 12 years who several years previously had suffered from ascariasis, produced an urticarial erythema of the whole body surface. This symptom, therefore, is probably anaphylactic in nature.

H. H. S.

Garcia (Carlos Lagos). [**Ascarid Ileus.**]—*Semana Méd.* Buenos Aires. 1924. Mar. 6. Vol. 1. p. 413. [Summarized in *Jl. Amer. Med. Assoc.* 1924. May 3. Vol. 82. No. 18. p. 1484.]

Bowel obstruction with masses of ascarids entails a particularly grave prognosis in young children. Fatal collapse from toxaemia may follow even prompt laparotomy. A girl aged 3 did not survive the extensive resection necessitated by the packing of the gut for 80 cm. by worms. In future the author proposes to suture the bowel, above the obstruction, to the skin and await recuperation from the shock before proceeding further.

R. T. L.

Verdelet (L.) & Lacouture (M.). **Occlusion intestinale d'origine ascaridienne.**—*Jl. Méd. de Bordeaux.* 1924. Sept. 10. Vol. 101. No. 17. p. 752.

A woman, 64 years of age, was admitted to hospital with symptoms of intestinal obstruction. On the following day 12 ascarides were vomited. She recovered on anthelmintic treatment without operation. The author states that in such cases there is usually a history of previous attacks of colic with passage of worms, that the obstruction is not absolute, pain is less in degree and less localized. He is of opinion that many of the symptoms are the result of "segmentary hyperperistalsis"—an intestinal spasm produced reflexly by the irritation of the worms.

H. H. S.

Amberger (J.). **Ein Fall von Askaridenobturationsileus mit mehrfacher sekundärer Darmperforation**—*Deut. Ztschr. f. Chirurg.* 1923. Dec. Vol. 183. No. 5–6. pp. 424–425. [1 ref.]

A young man, 17 years of age, was admitted to hospital with symptoms of appendicitis. At operation a large mass of Ascarides occupying the lower 20–25 cm. of the small intestine was found and 129 worms removed from an incision in the bowel wall. Several more were passed *per anum* during the succeeding 48 hours. An abscess developed at the site of the wound and more worms were removed. Repeated operations were performed subsequently owing to perforation by Ascarides passing, not through, but near the original opening in the bowel, the worms being found in the abdominal cavity. The patient died, but permission for autopsy could, unfortunately, not be obtained.

H. H. S.

Stewart (Quintin). **Discharge of *Ascaris lumbricoides* through a Herniotomy Wound.** [Correspondence.]—*Brit. Med. Jl.* 1924. July 19. pp. 103–104.

A native of Nigeria, aged 79 years, was operated upon for a strangulated inguinal hernia. Four days after the operation 3 adult *Ascaris lumbricoides* were removed from between the skin and muscle at the site of the incision, and the administration of santonin brought away many more in the evacuations. The worms must have made their way through a softened area in the intestinal wall after reduction of the strangulated bowel, the local adhesions fortunately preventing infection of the general peritoneal cavity.

H. H. S.

Schinz (Hans R.). **Askariden in Röntgenbild.**—*Deut. Ztschr. f. Chirurg.* 1924. Mar. Vol. 184. No. 1–2. pp. 105–109. With 3 text figs. [1 ref.]

A woman of 40 years who had previously been operated upon for appendicectomy and, later, for ileus, complained of pain situated mainly in the left lower quadrant of the abdomen. X-ray examination after a bismuth meal showed, by "worm-like absence of shadow," the presence of Ascarides, which were removed by administration of santonin and oil of chenopodium. Symptoms greatly improved but the pain did not entirely disappear and was probably due in part to some other cause, possibly tuberculosis of the mesenteric glands which were seen to be enlarged.

H. H. S.

Holthusen (Hermann). **Biologische Dosierung der Röntgenstrahlen mit Ascariseiern.**—*Klin. Woch.* 1924. Jan. 29. Vol. 3. No. 5. pp. 185–186. With 3 figs.

In this paper is described a method of testing the relative intensity of X-rays, using as indicator the percentage number of living ascaris ova which are injured by exposure to the rays.

H. H. S.

Cram (Eloise B.). **The Influence of Low Temperatures and of Disinfectants on the Eggs of *Ascaris lumbricoides*.**—*Jl. Agric. Res.* Washington. 1924. Jan. 19. Vol. 27. No. 3. pp. 167–175. [11 refs.]

This paper contains much valuable information both from the purely scientific and from the economical aspects, but is probably of greater importance to the agriculturist and the veterinarian than to those

engaged in human medicine. It is so condensed and full of facts that even a brief account of the experimental details would necessitate transcribing almost the whole. Little more than the conclusions, therefore, can be given here.

Fresh ova of *Ascaris lumbricoides* were found to be viable even after being kept for 40 days at a temperature of - 16° F., so that under natural conditions many would survive in pens, pastures, stables, etc., through a severe winter. Eggs in a later stage of development and containing embryos were killed by 20 days' exposure to the same temperature. As regards the influence of disinfectants, immersion in 5 per cent. carbolic acid solution for 10 hours, rendered fresh and partially developed eggs incapable of further growth, as did 3 per cent. cresol in 5 hours. "Under conditions as nearly analogous as possible to those in sanitary pens, in which pigs are kept, the efficacy of disinfectants was assured if the mixture of eggs and sawdust was thoroughly raked over and sprayed four times on each of two successive days." The proper cleaning, however, is regarded as a more useful and economical method of eliminating the eggs since the thoroughness of application which the experiments show to be necessary for disinfectants is not likely to be secured in practice, though phenol and cresol disinfectants may help to destroy Ascaris infection in pens and buildings under special conditions.

It is worthy of note that fresh ova were found to be more resistant to low temperatures than those containing active embryos, but that as regards resistance to disinfectants, the reverse appeared to be the case.

H. H. S.

Bakker (C. R.). **Invloed van lage temperaturen op de eieren van *Ascaris lumbricoides*.** [Influence of Low Temperatures on the Eggs of *A. lumbricoides*.]—*Tijdschr. v. Vergelijkende Geneesk. enz.* Leyden. 1924. Sept. 10. Vol. 10. No. 4. pp. 275–281. English summary p. 280. [9 refs.]

The eggs used were obtained from the vagina and uteri of adult *Ascaris lumbricoides*. In eggs incubated on moist filter paper at 25°C., the first larvae appear in about a fortnight, and the majority in about three weeks. Eggs were then exposed for varying periods to low temperatures and the results noted after incubation at 25°C. The temperatures to which they were exposed were —15°C., —20·5°C., —25°C., —30°C., —60°C., —120°C., and —190°C. (liquid air), and at each of these the eggs were allowed to remain for 5, 10, 20, 40, 60 minutes and 24 hours, and at —15 C. also for 47½ hours. It was found that at temperatures from -30°C. downwards, exposure had a deadly effect on the eggs. —15°C. has no bad effects on the subsequent development of the eggs. After a week's exposure at —25°C. the eggs appear to have suffered no ill effects; exposure to this for longer periods, however, causes less and less eggs to develop when incubated later. Exposure to —20·5°C. causes less eggs to die than in those exposed to —25°C.

R. T. L.

Wassell (C. McA.). **Development of Ascaris Eggs in Formaldehyde Solution.** [Correspondence.]—*China Med. Jl.* 1924. June. Vol. 38. No. 6. p. 529.

Ascaris eggs stored in a 10 per cent. solution of formalin for class purposes were found after three months to be embryonated and the living larvae escaped after pressure under a cover glass.

R. T. L.

Takano (Ryozo). [**Contributions to the Development of Ascarid Eggs. II Communication.**]—*Osaka Igakkwai Zasshi* (*Jl. Osaka Med. Soc.*). 1924. Mar. Vol. 23. No. 3. [Summarized in *Japan Med. World.* 1924. Aug. 15. Vol. 4. No. 8. p. 209.]

A previous opinion that ascaris eggs develop most favourably in an acid liquid is confirmed.

R. T. L.

Asada (Junichi). [**An Experimental Study on the Biological Nature of the Larvae and Adult Forms of Ascaris in the Host's Body: especially on the Adult Ascaris found in the Abdominal Cavity of the Host.**]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1924. Mar. Nos. 2361 & 2362. [Summarized in *Japan Med. World.* 1924. July 15. Vol. 4. No. 7. pp. 178–179.]

Ascaris larvae never live long in the abdominal cavity, although adults survive for two weeks, but die within 18 days in experimental cases. While alive the females lay eggs in this situation. The dead worm causes severe reaction and nodules or abscesses might result. These experiments lead one to consider whether the adult worms found in the abdominal cavity in human cases may not have escaped from the intestine.

R. T. L.

Asada (Junichi). [**On the Development of Ascarid Larvae in the Body of the Host. Especially on the Desquamation of the Ascarid Larvae and the Nourishing Substances for the Ascarid Larvae.**]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1924. Apr. No. 2366. [Summarized in *Japan Med. World.* 1924. July 15. Vol. 4. No. 7. p. 179.]

Within a short period after hatching the ascaris larva moults. In the lungs the larvae live a comparatively long time, and there or in the trachea undergo a second ecdysis and in the intestine two further moults take place. They feed upon the corpuscles, plasma and tissue juices.

R. T. L.

Hiraishi (Sadaichi). **Some Experiments on the Growth of** *Oxyuris vermicularis.*—*Japan Med. World.* 1924. May 15. Vol. 4. No. 5. pp. 118–119.

The aim of this study was to determine whether larvae of Oxyuris after being ingested by mice migrate into the internal organs. At various periods after feeding the animals were killed, the abdominal and pleural cavities, the gastric and intestinal contents, were separately washed with salt solution and the fluid collected and centrifuged, and the various organs were ground up with saline and the resultant emulsion centrifuged, and the products examined. There was no migration detected in any of the experiments, but the matured larvae were found to hatch in the upper part of the small intestine in an hour or two, to pass down and collect in the lower part, while a few reached the large intestine. Living larvae may be found for at least five days, but in decreasing numbers.

H. H. S.

FISCHER (Walther). **Oxyuren und Appendicitis.**—*Deut. Ztschr. f. Chirurg.* 1923. Nov. Vol. 183. No. 3/4. pp. 222–245. [46 refs.]

The author examined the appendices taken post-mortem from 68 men and 37 women. Oxyuris was present in 19 of the former and 10 of the latter, or in 28 per cent. of the total. He holds, however, that the worm has but little etiological relation, probably none, to appendicitis. Among the reasons which he discusses are : firstly, that Oxyuris is rarely found in cases of acute appendicitis ; secondly, that one would expect more frequently to see involvement of the large intestine ; thirdly, that microscopical examination of appendices in cases of Oxyuris infection in the majority of instances shows no departure, histologically, from the normal. Lastly, the question of local eosinophilia is discussed very fully and the author concludes that it is not a point of much value in this respect. He found the condition even more marked in some cases of appendicitis where Oxyuris was absent, while, on the other hand, in many cases of Oxyuris infection eosinophilia was not present. He suggests that it may be merely a concomitant of digestive function, its presence and degree depending upon the time which has elapsed between the taking of food and removal of the viscus, and thus on the stage of the digestive process.

H. H. S.

JAROSCHKA (Karl). **Ueber Typhlitis und Appendicitis, verursacht durch Oxyuren.**—*Deut. Ztschr. f. Chirurg.* 1923. Nov. Vol. 183. No. 1/2. pp. 99–113. With 3 text figs. [41 refs.]

The question is discussed, largely by means of published statistical records, as to what extent Oxyuris, when associated with appendicitis, is definitely causative. Appendicular colic and the condition designated as " Appendicopathia oxyurica " are, as a rule, afebrile. The worm can penetrate an intact rectal mucous membrane and set up perirectal abscess. A case is recorded, in a child of 6 years, in whom such an abscess was found on incision to contain thin pus and a number of living specimens of Oxyuris. They were also present in the surrounding granulation tissue. In another instance, the details of which are given, a pericaecal swelling with marked local eosinophilia was associated with Oxyuris in considerable numbers.

H. H. S.

KRIMER (M.). **" Vermitacet," gegen** *Oxyuris vermicularis.*—*Deut. Med. Woch.* 1924. June 13. Vol. 50. No. 24. pp. 803–804.

" Vermitacet " is made from *Tanacetum vulgare*, L. (tansy), mixed with a mild purgative fruit-paste. The author has found it very effectual in the treatment of infections by *Oxyuris vermicularis*. The dose is not stated, but " a packet " suffices for an adult ; children are said to require a proportionately smaller quantity. It is given as a single dose in the morning. Of seven patients whose ages varied between 2½ and 48 years, six were cured by the one dose ; one, a woman of 32 years, required a second dose. The worms were sometimes living when passed and the author recommends frequent washing of the perineum and buttocks with cold water, night and morning and after each act of defaecation.

H. H. S.

Weinberger. **Eine einfache und zuverlässige Oxyurenbehandlung.** [A Simple and Reliable Treatment of Oxyuriasis.]—*Med. Klin.* 1924. June 1. Vol. 20. No. 22. p. 750.

The author, after trying in vain all the usual treatments for eradication of Oxyuris, found rectal injection of Chloramin effectual. This is a white powder which, when dissolved in water, has a strong smell of chlorine. A purgative is administered in the morning, and in the evening half a litre of warm water containing 1–2 tablespoonfuls of chloramin solution, 20 in 250, is injected into the rectum. This treatment is carried out daily for five or six days and repeated after an interval of 8–9 days. The fluid at first causes considerable irritation and can be retained for about two minutes only, but soon it can be borne for as long as 10–20 minutes. Thirteen cases, both children and adults, have been now successfully treated by the author in this way, some of them after failure with the usual methods. Care must, of course, be taken, by washing of hands and buttocks, to avoid reinfection.

H. H. S.

Brüning (H.). **Kurze Bemerkungen zu den Aufsatze von Herrn Dr. Weinberger ueber "Eine einfache und zuverlässige Oxyurenbehandlung."** (Nr. 22 dieser Wochenschrift.)—*Med. Klin.* 1924. July 20. Vol. 20. No. 29. (1023). pp. 1001.

The author writes objecting to the description by Dr. Weinberger of his treatment of Oxyuris infection by chloramin as "simple and reliable." He maintains that a method involving repeated rectal injections, careful washing of hands and buttocks, attention to the finger-nails, the wearing of bathing-drawers at night, and a repetition of the whole process after an interval of 8 or 9 days cannot be properly regarded as "simple," while as to its reliability sufficient time has not been allowed to elapse to warrant such a pronouncement.

H. H. S.

Nishiwo (Tsunenori). [**Studies on Oxyuris.**]—*Chiba Igakkwai Zasshi* (*Jl. Chiba Med. Soc.*). 1914. Mar. Vol. 2. No. 2. [Summarized in *Japan Med. World.* 1924. Aug. 15. Vol. 4. No. 8. p. 205.]

From a detailed study of the development of the Oxyuris of the rat it is concluded that a second host is unnecessary for the completion of the life cycle and that no migration is essential from the intestine to other organs of the host for complete development.

R. T. L.

Hasegawa (T.). **Beitrag zur Entwicklung von Trichozephalus in Wirte.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Aug. Vol. 28. No. 8. pp. 337–340. With 4 figs.

The author carried out experimental work with human Trichuris on white rats, and with *T. depressiusculus* on puppies. He found that 20 hours after feeding the rats with ripe ova of *T. trichiura* the larvae had escaped and penetrated the villi of the intestine, especially the caecum. In the case of *T. depressiusculus* similar penetration took place, and the larvae remained in the mucosa for two days. In

70 hours or thereabouts after being ingested, they passed again from the villi to the lumen. They never penetrated deeper into the submucosa, but remained coiled in the neighbourhood of the Lieberkühn glands, the cells of which were destroyed. Ova began to appear again in the faeces 36 days after the initial feeding.

H. H. S.

Hasegawa (Tokuzo). [**On Some Observation on the Development of** *Oxyuris vermicularis*.]—*Tokyo Ijishinshi* (*Tokyo Med. News*). 1924. May. No. 2367. [Summarized in *Japan Med. World*. 1924. Aug. 15. Vol. 4. No. 8. p. 203.]

Mature eggs in the female did not develop at 28–30° C., but at 30°, with adequate moisture, they hatched on the sixth day of incubation. The larvae would reach the stomach and intestines of fed animals in 2½ hours and could be found lodged in Lieberkühn's crypts. They did not pass through the liver and lungs before infesting the intestines as in the cases of Ascaris and the ankylostomes.

R. T. L.

Leiva (Lamberto). **The Common Whipworm** (*Trichuris trichiura*) **as a Health Hazard.**—*Jl. Philippine Islands Med. Assoc.* 1924. June. Vol. 4. No. 6. pp. 223–227. With 3 figs. [7 refs.]

Trichuris trichiura is a prevalent worm in the Philippine Islands, and the author, without wishing to pose as alarmist, calls attention to its presence as a dangerous worm penetrating the mucosa and possibly opening the way for other infections either bacterial or protozoal.

R. T. L.

Dieckmann (A.). [**Operations for Intestinal Parasites.**]—*Beiträge z. Klin. Chirurg.* Tübingen. 1924. Vol. 131. p. 373. [Summarized in *Jl. Amer. Med. Assoc.* 1924. May 24. Vol. 82. No. 21. p. 1739.]

A man, aged 46, who had suffered from haemorrhage from the bowel for several weeks, accompanied by emaciation, was submitted to operation. The condition was ascribed to enormous numbers of *Trichuris trichiura* in the ileum and ascending colon, a two-litre dish being filled with those removed. He died soon afterwards of thrombosis of the inferior vena cava and renal veins.

H. H. S.

Dive (G. H.) & Lafrenais (H. M.). **A Case of Deposition of the Eggs of** *Hepaticola hepatica* **in the Human Liver. With a Note on the Identity of the Eggs.** By MacArthur (W. P.).—*Jl. Roy. Army Med. Corps.* 1924. July. Vol. 43. No. 1. pp. 1–4. With 4 figs. [9 refs.]

MacArthur (W. P.). **A Case of Infestation of Human Liver with** *Hepaticola hepatica* **(Bancroft, 1893) Hall, 1916; with Sections from the Liver.**—*Proc. Roy. Soc. Med.* (Sect. Trop. Dis. & Parasit.) 1924. Aug. Vol. 17. No. 10. pp. 83–84.

At the post-mortem on a British soldier, aged 20, who had served 3 years in India and had died with clinical symptoms chiefly of septic pneumonia, a number of abscesses were found widely scattered in both lungs and in the liver. In proximity to the liver abscess were found, microscopically, masses of eggs identified by MacArthur as those of *Hepaticola hepatica* (a trichurid parasite common in the liver of the rat but not hitherto recorded for man.)

The liver tissue is carefully described and well illustrated in a note by Colonel MacArthur. The masses of eggs were encysted in fibrous tissue walls. There was no round-cell infiltration nor other sign of inflammation. The eggs were of the typical barrel-shaped appearance, and sections of adults also appeared in the tissues.

R. T. L.

Podjapolskaja (V. P.). [*Trichostrongylus instabilis* **in the Intestine of a Child.**—*Russian Jl. Trop. Med.* Moscow, 1924. No. 2. pp. 64–65. [In Russian.]

In 1922–3, 8 children between the ages of 2½–14 years were examined post-mortem by the author. In two there were cestodes which owing to bad preservation could not be further identified. The other six cases harboured only parasites belonging to the Trematoda [Nematoda!], viz. (1) *Enterobius vermicularis* in all of the eight bodies; (2) *Ascaris lumbricoides* in five; (3) *Trichuris trichiura* in two, and (4) Trichostrongylus in one.

The Trichostrongylus occurred in a girl 7 years of age who died in 1922 of tubercular meningitis. In this case three types of worms were found, *Enterobius vermicularis* numbering in all over 2,800, *Ascaris lumbricoides* over 50 and a single Trichostrongylus which was of very small dimensions, and scarcely visible to the naked eye. This male specimen gave the following measurements :—

Length of body	4·446 mm.
Thickness in front of bursa	0·0779 mm.
Length of oesophagus	1·6 mm.
Length of spicule	0·1375 mm.
Length of gubernaculum	0·0779 mm.

The previous cases of this infection in man were recorded by Looss from Egypt and this is the first human case in Russia and indeed in Europe. [The species is common in sheep in Europe.]

R. T. L.

Sweet (W. C.). **The Activities of the Australian Hookworm Campaign.**—*Med. Jl. Australia.* 1924. May 17. 11th Year. Vol. 1. No. 20. (Supplement.) pp. 319–322. [5 refs.]

The Australian Hookworm Survey was begun on October 1st, 1919, and was completed by December 31st, 1922. The whole Continent was surveyed, either by examining representative groups of persons in different occupations and age-groups, or by a thorough house-to-house canvas in certain chosen areas. The results showed that there was no infection in Victoria or Southern Australia and practically none in Tasmania, only 2 being found positive amongst 2,209 examined. In Western Australia ankylostomiasis is practically confined to the coastal aborigines in and around Beagle Bay. In the Northern Territory infection is higher (16·7 per cent.), nearly all acquiring the disease in the extreme northern part where the rainfall is over 50 inches. In New South Wales the incidence-rate is 3·3 per cent., in Queensland 9·2 per cent., there being an endemic hookworm area in the latter comprising Cape York Peninsula and a coastal strip from Cook Town to the Tweed River. In Papua and New Guinea the rates were 59·2 and 74·2 per cent. respectively. It was found that where

the rainfall was above 45 inches hookworm disease was usually endemic, but that other climatic conditions are also concerned is shown by the fact that whatever the rainfall no endemic disease was found south of 32° South latitude.

As regards age incidence, among the natives who go barefoot the highest rate was found during the most active years of life, 19 to 40, but amongst the whites the school-age group (6–16 years), which is the barefoot age-group, shows the highest incidence.

Progress so far has been good, and the author points out that sporadic or intermittent activities are useless, and he recommends co-operation of the Commonwealth with the States of Queensland and New South Wales, the chief parts affected, in organizing and carrying out measures of control.

H. H. S.

Smillie (W. G.). **Control of Hookworm Disease in South Alabama.** - *Southern Med. Jl.* 1924. July. Vol. 17. No. 7. pp. 494–497. [2 refs.]

The principles in regard to hookworm infection observed in South America also hold true for those portions of the United States in which those factors exist which are favourable to hookworm infestation, viz., favourable climate, favourable top soil for larva development and continuous soil pollution. After one year's observation in Covington County it seemed perfectly clear that the hypothesis that severe hookworm infection occurs almost exclusively in rural children of school age is correct. The infection rate in adult town dwellers in Covington County is less than 10 per cent., while from 40 per cent. to 50 per cent. of the children in the town schools are infected to a slight degree. All severe infections are in children who live in the country and drive to town to school. In the rural children of school age the infection rate is 99 per cent., and many are very heavily infested. It is not at all rare to find over one thousand worms in a child of twelve years, and clinical cases of severe hookworm disease are seen in every rural school. The disease can be eradicated within a single year by mass treatment of the rural school children, but the hookworm infection is never permanently reduced by treatment. For this sanitation is essential. Combined with treatment, sanitation measures should be pushed until at least 80 per cent. of the rural homes have closets.

R. T. L.

Jacocks (W. P.). **Hookworm Infection Rates in Eleven Southern States as revealed by Resurveys in 1920–1923.**—*Jl. Amer. Med. Assoc.* 1924. May 17. Vol. 82. No. 20. pp. 1601–1602. With 3 charts in text.

A resurvey was carried out in the period 1920–1923 to estimate what degree of improvement had taken place since the first campaign against hookworm in 1910–1915 in the States of Virginia, North and South Carolina, Georgia, Alabama, Mississippi, Louisiana, Texas, Arkansas, Tennessee and Kentucky. 81 of the 422 counties originally surveyed were chosen and the infection-incidence was found to have fallen from 55·1 to 27·8 per cent. The actual severity of infection, however, is much less than formerly, so that the degree of improve-

ment is, in reality, greater than the mere percentage of persons harbouring the parasites would indicate. In a remote fishing district on the North Carolina coast the incidence in the first survey proved to be 16·6 per cent., whereas in 1923 of 308 examined only one was found to be positive. The primary treatment must, therefore, have been thorough and effective.

H. H. S.

Hill (Rolla B.) & Earle (Walter C.). **The Presence of *Ancylostoma duodenale* in Porto Rico.**—*Bull. Porto Rico Med. Assoc.* 1924. June. Vol. 18. No. 145. pp. 6–7.

The authors examined the faeces of 64 persons in the Arecibo district, 50 of them from the jail. All came from the northern part of the island. Sixteen were found to be harbouring Ancylostoma, the average being 4 per person; amongst the same individuals the number of Necator was 419 per person. From the association with Spaniards of those infected with Ancylostoma it is conjectured that this parasite was first introduced from Spain.

H. H. S.

Martinez Briceño (Rafael). **Importancia social de la campaña contra la Anemia Tropical.**—*Repert. Med. y Cirug.* Bogota. 1924. Feb. Vol. 15. No. 5. (No. 173). pp. 227–241. With 4 figs.

The hookworm campaign was started in Bogota in 1920. Since then the number of persons treated totals 206,453, of whom 133,405, or 64·6 per cent., are recorded as cured. The installation and use of latrines have met with considerable opposition, as the general opinion is that they are a luxury, not a necessity, that it is better to deposit excreta on the ground, where they are dried by the sun, than in "dark, evil-smelling holes," that the inspectors, in their visits, place magic powders in the latrines in order to spread disease and, perhaps, sudden death, and that the anaemia is due to starvation and, therefore, the money spent in erecting latrines would be better used in providing food.

Tables are appended showing the numbers treated year by year and the cost.

H. H. S.

Callender (George R.) & Bitterman (Theo.). **Hookworm Infection in Filipino Soldiers.**—*Milit. Surgeon.* 1924. Oct. Vol. 55. No. 4. pp. 434–442. With 1 fig. [8 refs.]

As a result of an investigation into the prevalence of hookworm in Filipino soldiers it was found that 53 per cent. were infected, but that, from examinations of men grouped according to length of service, the infection tended to die out fairly rapidly owing to the prevention of re-infection through the wearing of boots. Thus, 77 per cent. of recruits were infected, but only 18 per cent. of those with ten years' service.

Blood examinations showed that infection was not generally severe, since there was no fall in the haemoglobin and the eosinophilia was only 8 per cent.

H. H. S.

MAPLESTONE (P. A.). **A Critical Examination of Stoll's Method of counting Hookworm Eggs in Faeces.**— *Ann. Trop. Med. & Parasit.* 1924. Aug. 2. Vol. 18. No. 2. pp. 189–194. [1 ref.]

The author tested in various ways the accuracy of the method published by STOLL for estimating the number of hookworm eggs in faeces [see this *Bulletin*, Vol. 20, p. 950]. A comparison with the salt concentration method showed considerable discrepancies. In one instance, 5½ times as many eggs were found by the latter method as by the former. Further, STOLL stated that no cultures of the same faeces produced as many larvae as were shown by egg counts. This also was demonstrated not to hold good. The subjoined Table gives some of the author's results in which these facts are shown.

Number of specimen.	Eggs per gm. by Stoll's method.	Eggs per gm. by salt concentration method	Larvae per gm. in control cultures.
1	900	5,092	4,080
2	600	236·5	Not done.
3	150	231·5	353
4	150	369	450
5	600	394·5	796
6	10,000	6,414	8,833

H. H. S.

CORT (William W.). **Investigations on the Control of Hookworm Disease. XXXII. Methods of Measuring Human Infestation.**— *Amer. Jl. Hyg.* 1924. May. Vol. 4. No. 3. pp. 213–221. [9 refs.]

There are fallacies in evaluating human infestation in terms of the incidence of hookworms. Two hypothetical examples are used to illustrate the differences in value between information on the incidence and on the degree of human infestation. Incidence statistics are useless in estimating the results of control work or in epidemiological analyses. The author considers that the time is now ripe to discard completely the routine re-examination after treatment. One of the most important possibilities of the "egg-counting" method is its use in measuring the results of control work and especially the degree in which this has lasting effect in keeping down hookworm infestations. Certain far-reaching modifications of administrative procedure in hookworm control suggest themselves, for the use of the egg counting technique in preliminary surveys will provide quantitative data upon which to plan adequately control measures. Its use in evaluating treatment will save the expense of routine examinations and it can be used to measure the results of control measures.

In illustration of the failure of incidence statistics the recent results of SMILLIE in Brazil are quoted. A resurvey of an area where control work had been carried on for four years showed, by faecal examination, an incidence of 69 per cent. infestation as compared with an original rate of 71·2 per cent. A survey of health of this population showed a great improvement and hookworm disease had apparently disappeared. A series of worm counts gave an average worm index of only 14 per individual, whereas the original worm count in this area is estimated to have been about 300 per individual. Here was a reduction of mass

infestation of about 95 per cent., while there was only a reduction of 2·2 per cent. in the number of individuals found positive by faecal examination.

R. T. L.

Hirst (L. Fabian). **Investigations on the Epidemiology of Hookworm Disease in Colombo. Part I. On the Isolation and Identification of Infective Nematode Larvae. Part II. Observations on the Viability of Hookworm Larvae.**—*Ceylon Jl. Science* (Section D. Med. Science). 1924. June 4. Vol. 1. Pt. 1. pp. 1–31. With 1 plate. [18 refs.]

The greatest gaps in our present knowledge of the epidemiology of hookworm infection relate to the viability and behaviour of the ova and larvae in soil, more especially under tropical conditions. The author has applied three tests to determine whether larvae found in soil are infective to man or are merely free-living nematodes. These are :—

(1) The *Aerotropic Test.* The larvae of Necator, Ancylostoma and Strongyloides show *aerotropism, i.e.*, extend singly or in groups into the air from the surface of suitably prepared cultures. (2) *Membrane Penetrative Test* :—The larvae show *thigmotropism, i.e.*, will pass through buckskin into warm saline solution. (3) *Vital Penetrative Test* :—If over 1,000 larvae are used for skin infection, some will later be found in the trachea, *i.e.*, the larvae show *histotropism.* It was observed that in a culture in which the larvae showed aerotropism the saturated atmosphere of an incubator caused aerotropism to be replaced by thigmotropism for the larvae disappeared into the soil.

In Part II a series of laboratory experiments in which fully matured larvae over ten days old were used led to the conclusion that hookworm larvae under laboratory conditions in Colombo in a variety of different soils can survive at least four months. Cultivated Necator larvae survived 120 days in the interstices of the unsterilized laterite soil. Larvae lived about 3 months in water and in fluid extracts of trench soil. It was also apparent that larvae which had become unsheathed could survive in the soil for long periods. [These results differ in important respects from those recently reported by Cort and others from studies in the West Indies.]

R. T. L.

Ramsay (G. C.). **Hookworm Dissemination.** [Correspondence.]—*Indian Med. Gaz.* 1924. May. Vol. 59. No. 5. p. 269.

In reply to Dr. B. McVail, who asked how the larvae hatched from pigs' faeces were proved to be larvae of the human hookworm, the author explains that he bases his conclusions on the fact that " human ankylostome ova were found apparently intact in the faeces of pigs which had swallowed human faeces, that larvae indistinguishable from human hookworm larvae hatched out in cultures" and that no hookworms were found in the pigs at post-mortem. Dr. McVail has pointed to the destructive effect of temperatures above 98·4°F. on the ova of ankylostomes and necators, whereas the normal temperature of the pig is 104°F. ; to this the author replies that hookworm ova will hatch from faeces of patients suffering from pneumonia and malaria and with temperatures ranging from 102°–105°F.

R. T. L.

DARLING (Samuel T.). *Ancylostoma braziliense* **de Faria, 1910, and its Occurrence in Man and Animals.**— *Amer. Jl. Hyg.* 1924. Sept. Vol. 4. No. 5. pp. 416–448. With 10 figs. [16 refs.]

This article starts with a general survey of previous opinions as to the identity or otherwise of *A. braziliense* and *A. ceylanicum*, after which a description of each is given, as recorded. The main differences are that the small tooth of the former is smaller than the corresponding tooth of the latter, and the caudal bursa has longer and finer rays, especially the externo-dorsal.

The author has examined specimens from various parts of the world—Malay States, Java, Manila, Fiji, Brazil, Panama and Sierra Leone—and he demonstrates that the size and conformation of the teeth are inconstant features and that erosions, shortenings and bluntings of them occur. Also the size of the worms varies not only with the host, but even in the same host. Thus, the male *A. braziliense* in man in India has a length of 8·5 mm., in the cat in Brazil only 4·7 mm.; in the dog in Manila 8 mm., in the same animal in Brazil 6·5 mm. (some allowance may perhaps have to be made for shrinkage in the method of fixation). However, the differences are such that if specimens from Malaya and Brazil were submitted for examination they would almost certainly be regarded as distinct species, but examination of a large number from various hosts—man, dog, cat, civet cat—in different geographical regions shows that all are mere variations in a single species.

Infection by *A. braziliense* in man is found to be very slight as compared with that by *A. duodenale* or *N. americanus*. Even the Chinese night-soil coolies in the Federated Malay States only show some 5 per cent. infection as compared with the other two as 100, and in 7 Europeans infected with these latter no *A. braziliense* were found. As a rule the number was small, 1 or 2, sometimes 3 or 4, once 29, although the larvae must be present in the soil, since dogs may harbour between 200 and 300, and barefooted natives must come into contact with the larvae. [On p. 418 are the words "Leiper receded from his position as to the synonomy . . . and said that de Faria's paper of 1914 contributed details which tended to show that the two species were distinct." The second part of this is correct, but the point stressed by DE FARIA which led to this statement has since been abandoned and Professor LEIPER was not stating his own opinion but was merely abstracting or summarizing DE FARIA'S paper.]

H. H. S.

VAN THIEL (P. H.). **De differentieeldiagnose van de strongyloïde larven van** *Necator americanus* **en** *Anchylostoma caninum.* [The Differential Diagnosis of the Larvae of *N. americanus* and *A. caninum*.]—*Tijdschr. v. Vergelijkende Geneesk. enz.* Leyden. 1924. Sept. 10. Vol. 10. No. 4. pp. 282–285. With 4 figs. English summary pp. 285–286. [3 refs.]

The author found the following differences between the encysted larvae of these two hookworms:—

1. *Mouth cavity.* In *Necator* the head end of the chitin-cylinder consists of two thick chitinous processes generally bent outwards; in *A. caninum* the chitin-cylinder is much thinner and the processes are thin and not bent outwards.

2. *Cuticle.* The striations on the cuticle are more pronounced in *Necator* than in *A. caninum.* In the former the distance between the striae is 1·52μ.

R. T. L.

Stekhoven Jr. (J. H. Schuurmans), & Stekhoven-Meyer (A. W. Schuurmans). **Voorbereidende onderzoekingen met betrekking tot de differentiatie van de larven van de mijnwormen van mensch en hond.** [Preliminary Investigations with regard to the Differentiation of the Hookworm Larvae of Man and Dog.]—*Tijsdchr. v. Vergelijkende Geneesk. enz.* Leyden. 1924. Apr. 26. Vol. 10. No. 2–3. pp. 101–119. With 23 figs. English summary p. 118.

The authors have tried to find an easy method of differentiating the different hookworm larvae; complicated methods, however trustworthy, being useless for every day use (*e.g.*, it is a well-known fact that each nematode species is composed of a definite number of cells, yet to count these cells is such a complicated procedure as to be useless). The authors therefore tried to find if this differentiation could not be made on biometric lines. Consequently the eggs from the uteri of *A. duodenale*, *A. caninum*, *A. ceylanicum* and *N. americanus* were carefully measured. From the measurements it was found that the eggs could be arranged into two groups. 1. *A. caninum* and *N. americanus*, and 2. *A. duodenale* and *A. ceylanicum.* Further, that these results showed a distinct difference in size between the eggs of *A. caninum* and *A. ceylanicum*, the eggs of the former being generally longer and broader than those of the latter. However, for general practical use, the variations in the size of the eggs overlap to such an extent that it would be almost impossible to state from the hookworm eggs contained in a given sample of faeces whether the faeces was of human or canine origin. Attention was now paid to the larvae, the head, head-papillae, mouth cavity, cephalic glands, genital primordium, rectum, anus and tail being especially examined; although differences were noted, yet the authors concluded that there is not one which makes a certain determination of the larvae possible.

The larvae were also examined biometrically, but, unfortunately, no results were obtained which would render this method of any practical use.

R. T. L.

de Langen (C. D.) & Djamil (Moh.). **De nierfunctie bij ankylostomiasis.** [The Function of the Kidneys in Hookworm Disease.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 2. pp. 294–303.

Haemolysis is not the cause of hookworm anaemia, the typical features of haemolysis (increased bilirubinaemia and urobilinuria and high urobilin content of the faeces) being absent in uncomplicated hookworm disease. The clinical picture suggests toxic influence on the bone marrow causing the aplastic anaemia, as well as on other organs (disorders of the nervous system and endocrine organs). By means of "Ambard's constant" the authors tested the influence of the hookworm toxins on the kidneys. Preliminary tests in healthy individuals showed that disorder of the kidneys may be presumed if Ambard's

constant exceeds 0·1. In 11 out of 17 hookworm patients this was the case, whilst the value exceeded 0·1 in only 3 out of 14 sufferers from nontoxic, destructive malaria anaemia. In 4 patients examined in this respect after removal of the hookworms Ambard's constant became normal long before the haemoglobin percentage reached the normal level. The disturbance of the kidney function is not a sequel of the anaemia, but a specific toxic symptom.

W. J. Bais.

Baggchi (Harendra Nath). **A Case of Urticaria due to Hookworm Toxin.**—*Calcutta Med. Jl.* 1924. Aug. Vol. 19. No. 2. pp. 83–84.

The case of a girl, 13 years of age, is recorded in which there were repeated attacks of urticaria lasting for 1–7 days, sometimes preceded by epistaxis, associated with an eosinophila of 30 per cent. and the presence of hookworm ova in the faeces. Treatment by oil of chenopodium brought about a cure.

H. H. S.

Hayashi (Shunzo). [**Biochemical Study on the Nature of Anemia in Ankylostomiasis.**]—*Aichi Igakkwai Zasshi* (*Jl. Aichi Med. Soc.*). 1924. Mar. Vol. 31. No. 2. [Summarized in *Japan Med. World.* 1924. Aug. 15. Vol. 4. No. 8. p. 206.]

The demonstration of a haemolytic substance in alcoholic extracts of hookworm leads the author to consider "the pathogenesis of anaemia in ankylostomiasis to be due to the intoxication anaemia from the parasitic toxins rather than either haemorrhagic or intestinal obstruction anaemia," although these latter might play an accessory rôle in the production of the symptoms.

R. T. L.

Tsutsui (Goichiro). [**Experimental Investigation on the Resistance of Ancylostoma Eggs against Heat.**]—*Taiwan Igakkwai Zasshi* (*Jl. Formosan Med. Soc.*). 1924. Mar. No. 233. [Summarized in *Japan Med. World.* 1924. Aug. 15. Vol. 4. No. 8. p. 210.]

In faecal matter hookworm eggs die when raised to a temperature of 57° C. or higher for a few minutes. The larvae in the same medium are also killed.

R. T. L.

Tull (J. C.). **An Analysis of One Thousand Consecutive Cases of Ankylostomiasis treated in the District Hospital, Penang, during 1922 and 1923.**—*Far Eastern Assoc. Trop. Med. Trans. Fifth Biennial Congress, Singapore,* 1923. pp. 234–237.

All admissions to the District Hospital, Penang, have their stools microscopically examined. During 1922 and the first half of 1923, of 8,307 admissions, 1,000 cases harboured hookworms, *i.e.*, 8·3 per cent. There were seventeen deaths or 1·7 per cent. Of the patients, 463 were Chinese, 485 Indians and 23 Malays. The average haemoglobin on admission was 46 per cent. 178 had less than 30 per cent. and 72 less than 20 per cent. There was a rapid increase after the expulsion of the worms. In 46 patients the haemoglobin rose from between 10

and 20 per cent. to 35 per cent. in less than 17 days after the disappearance of ova from their stools. Treatment by oil of chenopodium cost about 1½d. a dose. The average number of hookworms expelled from the 1,000 patients was 78, while the largest number in one patient was 749.

R. T. L.

Leach (Charles N.), Haughwout (Frank G.) & Ash (J. Earle). **The Treatment of Hookworm Infestation with Carbon Tetrachloride. A Clinical and Laboratory Study.**—*Philippine Jl. Sci.* 1923. Nov. Vol. 23. No. 5. pp. 455–513. With 1 plate. [9 refs.]

After a detailed clinical and laboratory study on 100 long term inmates of Bilibid Prison, Manila, it is affirmed that carbon tetrachloride possesses virtues against hookworm which can be claimed by no other drug. Yet much remains to be added to our knowledge concerning its pharmacology and the extent and duration of pathological effects it may sometimes bring about. The authors now have no anxiety in administering 12·5 or even 15 cc. of the drug in selected cases. Not only have they had no deaths but also in no cases treated have symptoms of intoxication developed that called for treatment or gave the slightest anxiety. Many thousands of cases have since been treated elsewhere in the Philippines on precisely the same dose standards as employed in this investigation, with no accidents. They insist, however, that the drug should always be given under competent medical supervision. Doses of *pure* CCl_4 computed on the basis of 1 cc. to each 5·5 kilograms of body-weight are safe in the absence of contra-indication. The cases in which untoward symptoms have supervened may be traced, in the authors' belief, to impurity of the drug, alcoholism or disease of the liver; these being placed in their order of usual occurrence. Moderate alcoholism is not a contra-indication, provided liquor is withheld for 2 or 3 days before and after treatment. Saline purgatives *before* treatment apparently reinforce the irritative properties of the drug. Divided doses are both unnecessary and undesirable. The authors feel compelled to disagree radically with the conclusions of Docherty and Burgess that the lesions described by them were produced by carbon tetrachloride. [See this *Bulletin*, Vol. 20, p. 207].

R. T. L.

Giglioli (George). **A Hookworm Campaign in the Interior of British Guiana.—Mass Treatment with Carbon Tetrachloride.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1924. June 19. Vol. 18. No. 3. pp. 111–116.

In the two villages, Mackenzie and Akyma, in the interior of British Guiana, examination of a single faecal smear per man revealed a 68 per cent. infection with hookworm. In September, 1923, the whole population of 800 was treated by means of carbon tetrachloride in doses of 15 to 50 minims in water, without any preparatory measures, restriction of diet, or stoppage of work. Two weeks later, after re-examination of the faeces, only 6 per cent. infection was detected. In February, 1924, out of 100 examined 12 were passing ova, but none in large numbers. The cost was negligible, one cent per treatment.

The working capacity of the employees was considerably improved; whereas the trained men were loading 5·1 tons of ore per man per ten-hour day prior to treatment, the increase in tonnage 5 months later amounted to 1¾ tons per man per day.

H. H. S.

Pessoa (Samuel B.). **Experiments in the Treatment of Hookworm Disease with Carbon Tetrachlorid and Ascaridol.**—*Southern Med. Jl.* 1924. Sept. Vol. 17. No. 9. pp. 673–676. [1 ref.]

Two series of experiments were carried out. In the first, to twenty persons harbouring an average of 87·9 hookworms per patient was given a mixture of 0·75 mils of ascaridol and 1 mil of carbon tetrachloride; children were given doses proportionately smaller. Half an hour later a purge of magnesium sulphate was administered. 94·5 per cent. of all the hookworms were removed, and five persons were cured by this treatment. Toxic symptoms—tingling of the hands, dizziness and burning in the stomach—were slight and disappeared as soon as the purgative had acted. One patient, however, a girl of 18 years, suffered from severe headache with fever, rapid pulse and general pains, nausea and vomiting, which did not clear up for four days.

In the second series twenty-eight persons received 0·75 mils of ascaridol followed in half an hour by 1 mil of carbon tetrachloride and a purge. The average number of hookworms per case was 170. Seven were cleared of parasites and the average removal was 94·3 per cent. In this group also there was one case of severe intoxication, the symptoms being similar to those of the last except that there was jaundice and a slow pulse, which had not quite disappeared when the patient, an alcoholic subject, left ten days later. In both, the symptoms are ascribed to carbon tetrachloride and not to the ascaridol. *Necator americanus* seemed to be more susceptible to the drugs than *Ancylostoma duodenale*, for the first series 97·6 per cent. of the former were expelled to 71 of the latter, and in the second series 98·3 to 22·4.

A note is added that preference may be given to treatment by carbon tetrachloride in 1 per cent. alcohol "to prevent the formation of the toxic carbonyl chloride" but nothing relative to this is stated in the paper itself.

H. H. S.

Bercovitz (Nathaniel). **Hookworm Control in Hainan. A Study of 2,507 Cases treated in Campaign in Kachek Region.**—*China Med. Jl.* 1924. May. Vol. 38. No. 5. pp. 413–417. [1 ref.]

Inhabitants of the Hainan Province show a high hookworm incidence, 80 per cent. in some parts and 100 per cent. among the aboriginal Miao and Boi tribes. Infection, moreover, is severe, the haemoglobin in some cases being as low as 25 per cent. From May to September, 1923, systematic treatment was carried out. The population of Kachek is estimated as 750,000, and of these 2,500 have been treated during the above period. A mixture of oil of chenopodium and carbon tetrachloride, 1 part of the former to 10 of the latter, was employed, the dosage being 2½ minims for each year of life, with a maximum of 45 "drops" (3 cc.). Occasionally transient nausea and giddiness were

complained of. One girl died 11 days after the treatment, but not, so far as could be ascertained, from the anthelminthic. The results of treatment are not stated, but a second survey of those treated is to be made later.

H. H. S.

Mail (L. C.). **The Treatment of Hookworm Disease in Samoa.**—*New Zealand Med. Jl.* 1924. June. Vol. 23. No. 115. pp. 253–257.

In Western Samoa over 90 per cent. of the natives are infected with *Necator americanus*. At the present time sanitation is unknown, yet the benefits from treatment are so marked as to justify this as an interim measure. The author describes a medical journey made by this party with the object of administering carbon tetrachloride. One cc. is used for the infants and young children from 6 months to 10 years, 2 cc. from 10 to 16 years, and 3 cc. for adults. 400 persons were dealt with in an hour. The effect of the drug became evident in about half an hour, when most of the people showed symptoms of dizziness and in some cases of headache, but the effects were invariably mild and the only untoward result was the case of fainting in an old man of over 60 years. Two hours after the drug 3 to 4 ounces of a mixture of magnesium sulphate, one part in two parts of water, was given to adults or ½ to 1 ounce to children, depending upon their size rather than age. In the total number of cases treated, viz., 3,500, there were no instances of carbon tetrachloride poisoning.

R. T. L.

Destéfano & Vaccarezza. [**Treatment of Hookworm.**]—*Semana Méd.* Buenos Aires. 1924. Mar. 6. Vol. 1. p. 403. [Summarized in *Jl. Amer. Med. Assoc.* 1924. May 3. Vol. 82. No. 18. p. 1484.]

In thirty-eight cases of hookworm treated with carbon tetrachloride a microscopically verified cure was obtained in 60 per cent. whereas 30 per cent. was the highest percentage previously attained when chenopodium was employed. Its use in cases of hard drinkers or where there is transient or permanent hepatic insufficiency is deprecated.

R. T. L.

Pettit (Auguste) & Sicé (Adolphe). **Présence d'un Némathelminthe dans un foie humain.**—*Bull. Acad. Méd.* 1924. June 3. Year 88. 3rd Ser. Vol. 91. No. 23. pp. 716–718. With 1 fig.

While studying the lesions of the liver in trypanosomiasis in a negro about 20 years old, from the village of Zeug Meline, Haut Como, sections showed portions of a nematode, with the polymyerian type of body musculature, within strands of fibrous tissue within the liver substance, but the material could not be identified further by Brumpt or Neveu-Lemaire, to whom the sections were submitted.

R. T. L.

Bell (W. J. E.). *Ascaris lumbricoides* **encircled by a Glass Bead.**—*Jl. Roy. Army Med. Corps.* 1924. Feb. Vol. 42. No. 2. p. 145. With 1 fig.

Cadeea (Marco A.). **Departamento de Uncinariasis. Informe narrativo de clausura del laboratorio de Caldas (Antioquia).**—*Repert. de Med. y Cirug.* Bogotá. 1924. July. Vol. 15. No. 10. (No. 178.) pp. 510–518.

Carrasco. **Hernie inguinale congénitale envahie par des ascarides-Herniotomie-Guérison.**—*Bruxelles-Méd.* 1924. Mar. 27. Vol. 4. No. 33. pp. 623–624.

Gerlach (W.). **Ueber mechanische Schleimhautschädigungen durch Askariden bei Askaridenileus.**—*Deut. Ztschr. f. Chir.* 1922. Vol. 173. pp. 396–404.

Girgensohn (R.). **Die chirurgischen Komplikationen der Askariden-Helminthiasis.**—*Deut. Ztschr. f. Chir* 1922. Vol. 169. pp. 309–315.

Hürzeler (O.). **Chirurgische Askaris-Erkrankungen.**—*Deut. Ztschr. f. Chir.* 1923. Vol. 178. pp. 393–401.

Lapenta (Vincent Anthony). **Jejunal Stricture due to** *Ascaris lumbricoides*. **A Case Report.**—*Amer. Jl. Surgery.* 1923. Nov. Vol. 37. No. 11. p. 286.

Lee (C. U.). **A Preliminary Report on the Incidence of Filarial Infection amongst Chinese, East Indians, Portuguese, Blacks and Mixed Races in Georgetown.**—*British Guiana Med. Annual for* 1923. pp. 32–34.
[Reprinted from Report of the West Indian Medical Conference, 1921. See this *Bulletin*, Vol. 21, p. 563.]

Le Roy des Barres (A.): **Ascaridiose de l'appendice.**—*Rev. Prat. Malad. des Pays Chauds.* 1923. Dec. Year 2. Vol. 3. No. 4. pp. 269–274.

Zapata (Eloy). **Informe narrativo de clausura del laboratorio de Santa Bárbara (Antioquia).**—*Repert. de Med. y Cirug.* Bogotá. 1924. July. Vol. 15. No. 10. (No. 178.) pp. 518–529.

Miscellaneous (Correspondence).

Jackson (J. H. S.). **Causes of Depopulation among some Island Peoples.** *Med. Jl. Australia.* 1924. Jan. 19. 11th Year. Vol. 1. No. 3. pp. 58–61.

With reference to this paper already reviewed (*ante*, p. 484), Dr. C. W. Cilento, the Acting Director of Public Health for the Territory of New Guinea, writes, under date of 24th September 1924, that "the figures in relation to gonorrhoea," as there reported by Dr. Jackson for the mandated territory of New Guinea, "now need very considerable modification," since Dr. Jackson reports "that there are now over 300 natives in hospital suffering with the disease and that it appears to be very widespread."

TROPICAL OPHTHALMOLOGY: A REVIEW OF RECENT ARTICLES. II.*

THE CONJUNCTIVA. -*Caterpillar conjunctivitis* is probably far more frequent in the East than it is generally recognized to be. This gives an interest to GROVE's[1] case of a young boy into whose eye a caterpillar was accidentally flipped; there was severe purulent conjunctivitis with much oedema and some corneal involvement followed by a perfect recovery.

Xerophthalmia. This is a deficiency disease depending on the lack of fat-soluble vitamin A. The subject is reviewed and a voluminous literature appended (BLEGVAD)[2]. MORI[3] of South Manchuria has studied the pigmentation of the bulbar conjunctiva, so familiar in xerosis cases, and has given at length his reasons for his conclusion that it is due to melanin.

TRACHOMA.—The interest in this disease appears to be becoming more intense and more world-wide with every passing year. Many of the communications are necessarily neither very new nor very important, but, at the same time, there are indications of a steady advance, and there are certain developments which may possibly prove of great value and will require to be followed carefully and critically. The task of the reviewer is under the circumstances a very difficult one.

Diagnosis.—The recognition of early cases of trachoma is becoming a very burning question. LI[4] discusses the subject from the point of view of China, and urges that all border-line cases should be treated as if they were trachomatous. STUCKEY[5], also writing from Chinese experience, gives much good advice, not the least valuable item being "never give a definite diagnosis of trachoma in the early stage when the patient has acute catarrhal inflammation and considerable discharge from the eyes." MORAX[6] speaks from the French colonial point of view, as it affects the parent country. He deals in turn with the various forms of conjunctival trouble which may be confused with trachoma, and discusses the difficulties of diagnosis and the different points which it is necessary to bear in mind. TRICOIRE[7] is deeply impressed with the importance of an early diagnosis of trachoma to the countries in which the disease is not endemic; a certain diagnosis may be difficult in early and in atypical cases, whilst both these forms are contagious; he is therefore seeking for a dermal reaction to assist

* For the first of this series see this volume, pp. 455–461.

1 GROVE (B. H.). Caterpillar Conjunctivitis.—*Amer. Jl. Ophth.* 1914. Feb. Series 3. Vol. 7. No. 2. p. 140.

2 BLEGVAD (Olaf). Xerophthalmia, Keratomalacia, and Xerosis Conjunctivae.—*Amer. Jl. Ophth.* 1924. Feb. Series 3. Vol. 7. No. 2. pp. 89–117.

3 MORI (Shinnosuka). The Pathology of the Pigmentation of Bulbar Conjunctiva in Xerosis Epithelialis Conjunctivae.—*Jl. Oriental Med.* 1924. Feb. Vol. 2. No. 1. pp. 103–104. With 2 figs.

4 LI (T. M.). Some Notes on the Early Diagnosis of Trachoma.—*Nat. Med. Jl. China.* 1924. Feb. Vol. 10. No. 1. pp. 1–6. [2 refs.]

5 STUCKEY (E. J.). The Diagnosis of Trachoma.—*China Med. Jl.* 1924. Mar. Vol. 38. No. 3. pp. 182–184.

6 MORAX (V.).—Les difficultés du diagnostic du trachome.—*Rev. du Trachome.* 1924. Jan. & Apr. Vol. 1. Nos. 1 & 2. pp. 19–32; 44–48. With 2 plates.

7 TRICOIRE (R.). Essai sur l'intradermo-réaction du trachome. Contribution au diagnostic et à la prophylaxie de la conjonctivité granuleuse.—*Bull. Soc. Path. Exot.* 1923. Dec. 12. Vol. 16. No. 10. pp. 718–719.

in the diagnosis of these difficult cases, and has been injecting a small quantity of a suitably treated emulsion of trachomatous granules under the skin. The experiments were interrupted. Without being absolutely convincing—and the author does not claim that they are—they would certainly seem to justify a further trial of the method; should it prove a success, the discovery may have very far-reaching results. Closely allied with this work is that of Sgrosso[8] who examined the serum of trachoma patients by the complement fixation reaction in order to determine whether antibodies are formed in trachoma or not, and to ascertain the relation of the reactions observed to those found in other diseases. Scrapings from trachomatous conjunctivae and ground up lymphatic glands furnish the antigens employed. Out of 50 trachomatous cases 41 gave positive reactions with the trachomatous antigen. In a series of 18 cases all the sera were positive against trachomatous and lymphoid antigens. The sera of cases of spring catarrh and of ocular lesions not affecting the conjunctiva were negative.

Distribution and Prophylaxis.—Marquez & Soria[9] have studied the intensity of trachoma infection in Spain: they find that it varies very greatly, being heaviest along a zone bordering the shores of the Mediterranean, whilst in certain other areas cases are very rare indeed. Steps are being taken to establish a reliable index of trachoma infection for each of the provinces and to study the sources of the disease in the affected areas. It is suggested that the severe infection on the Mediterranean littoral comes from the north of Africa in the persons of fishermen and others. The same subject has been exercising the French surgeons, and in the first volume of the *Revue du Trachome* there appears an article emphasizing the increased importance which the disease has acquired in France owing to the influx of workmen during peace and of colonial troops during the war. Bidault[10] has devoted his attention to the incidence of trachoma in an oasis of the Sahara, and has worked out graphic curves for the first five years of life. These show that the frequency of the disease increases *pari passu* with the increase in the figure for acute infections of the conjunctiva: this is taken as strong evidence that acute conjunctivitis paves the way for the onset of trachoma. A number of other interesting points are made. Fox[11] states that among 1,168 persons, of the tribe of the Blackfeet Indians in the reservation in Montana, there are 351 cases of trachoma (30·05 per cent.); the tribe is increasing in numbers. He comments on the neglect of the American Government to deal radically with a section of its own people, whilst so active in combating the same disease among immigrants. Pacheco Luna[12] was sceptical as to the correctness of his predecessor's view that trachoma does not

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8 Sgrosso. [Research in Immunity in Trachoma.]—*Arch. di ott.* 1923. Vol. 30, p. 326. [Reviewed in *Amer. Jl. Ophth.* Mar. 1924.]

9 Marquez & Soria. Distribution géographique du trachome en Espagne.—*Rev. du Trachome.* 1924. Apr. Vol. 1. No. 2. pp. 54–57. With 1 chart & 1 map in text.

10 Bidault (R.).—Statistique du trachome et des conjonctivites aigues dans la population infantile d'une oasis Saharienne (El-Oued Sud-Constantinois).—*Rev. du Trachome.* 1924. Apr. Vol. 1. No. 2. pp. 66–69. With 1 chart.

11 Fox (L. Webster). Trachoma among the Blackfeet Indians.—*Arch. of Ophth.* 1924. Mar. Vol. 53. No. 2. pp. 166–171.

12 Pacheco Luna (F.). Contribución al estudio de Trachoma en Guatemala.—*Arch. de Oftal., Hisp.-Amer.* 1919. Feb.

occur in Guatemala ; but, after a rigid search, he has failed to find any cases, and urges that a strict examination of all immigrants should be made to safeguard the State.

Howard[13] states that about 15 per cent. of the population of South China is trachomatous ; the percentage rises as one goes north up to 90 per cent. in certain northern districts. Probably at least 30 per cent. of all Chinese are infected, or roughly 120 million people ; of these 30 million are children ; two million are blind in both eyes, and five million more in one eye ; 20 million more have such poor vision that they are economically useless. In China trachoma is the leading factor in blindness. The available Western medical men are too few in number to have any material influence on the evil ; all they can do is to commence the education of the people ; the training of specialists must go hand-in-hand with the development of health education and must pave the way for legislation in the future when the time is ripe. Talbot[14] gives a further instalment of his description of the campaign against trachoma in Annam, noticed in a previous review. The main features of the work are (1) inspection in the schools ; (2) the working out of a trachoma index for the population ; (3) the standardization of a method of treatment, and (4) the instruction of the native teachers in the elementary facts of the prevention and treatment of the disease. Sergent, Foley & Parrot[15] describe the compaign against trachoma in Algeria. Paton's[16] paper deals with the prevention of trachoma in Australia and contains the interesting statement that 3·26 per cent. of 10,000 consecutive private patients showed evidence of trachoma. The characteristic features of the disease are stated to be " its curability as a community disease and its intractability as an individual infection." Schousboé[17] made an examination of the lids of soldiers in a Division in N. Africa (French, Indian and Algerian), and of a number of children belonging to the local population ; he has arrived at the following conclusions :—Trachoma never attacks healthy lids ; two factors are necessary for its inception—a lowered resistance in the patient, and an injury to the conjunctiva ; it is a disease of the poor and dirty, because their general health is poor ; it spreads in the family since the family consists largely of children ; it attacks the new arrival in a trachomatous area, if his conditions of life are unhealthy ; a germ is responsible, but the nature of the organism is still a mystery ; there is also, as an important factor, a predisposition of the patient to the disease. Darier[18] has met with three cases in which he believes that trachoma was transmitted in the course of a wrestling match ; it may be recalled that Patton, of Omaha, had a similar experience (*Amer. Journ. Ophthal.*, July 1922). Patton was of opinion that the contagion is conveyed in the sweat, but Darier

13 Howard (Howard J.). The Eradication of Trachoma among School Children in China.—*China Med. Jl.* 1924. Apr. Vol. 38. No. 4. pp. 255–270. [6 refs.]

14 Talbot (R.). Essai de prophylaxie scolaire du trachome en Annam.—*Rev. du Trachome.* 1924. Apr. Vol. 1. No. 2. pp. 48–53.

15 Sergent (Edm.), Foley (H.) & Parrot (L.). La lutte contre le trachome en Algérie.—*Rev. du Trachome.* 1924. July. Vol. 1. No. 3. pp. 87–92. [1 ref.]

16 Paton (D. D.). Trachoma.—*Med. Jl. Australia.* (Supplement.) 1924. May 24. Year 11. Vol. 1. No. 21. pp. 337–342. [10 refs.]

17 Schousboé. Notes sur la contagion du trachome chez l'adulte et chez l'enfant.—*Rev. du Trachome.* 1924. Apr. Vol. 1. No. 2. pp. 58–66. With 1 map.

18 Darier (A.). Contagion du trachome chez les lutteurs.—*La Clin. ophtal.* 1922. Nov.

thinks that the medium of infection is the fingers of the infected man, for it is said that the wrestlers deliberately dig their fingers into each other's eyes. Wrestling is a very common oriental sport, and this adds interest to the above observations. It only remains to mention that the July number of *Revue du Trachome* contains an article by ABADIE[19] on the prophylaxis and treatment of the disease.

Treatment.—DONNELL[20] advocates the free and persistent use of comparatively strong solutions of silver nitrate in association with massage applied by means of cotton-wool swabs. This treatment is in the main that which was the routine practice in the Madras Ophthalmic Hospital during the reviewer's superintendentship of that institution, and for 20 or more years before that. Of its great value there can be no possible question: the results were all that DONNELL now claims for it. NICATI[21] has been trying subconjunctival injections of various drugs with a view to provoke phagocytic action in the cure of the disease, and has found that sulphate of copper is the most effective of all the preparations he has tried; he claims for it that it is as specific a remedy for granular ophthalmia as mercury and arsenic are for syphilis. He uses it from 1 in 1,000 to 1 in 100, and prefers the stronger solutions. 2 cc. are injected, under stovain anaesthesia, on the first occasion and 1 cc. afterwards; the injection is given immediately behind the everted tarsus. In from one to two weeks' time the severe oedema of the lids, provoked by the injection, subsides and the next dose can be given. The maximum number of injections has been six for each eye. SÉDAN & MORENON[22] have carried out NICATI's treatment and have found it good and safe, but severe; the method is of particular value when a small staff has to treat large numbers of patients, or when the time available for treatment is short. They think that control of the intensity of the reaction is a consideration which should be aimed at and which should not be unattainable. NICOLLE[23] aims at cutting down the secondary infections, which so seriously complicate trachoma, by the means of suitable vaccines and serums. For the moment he is interested in the Weeks bacillus and is up against the difficulty that there appears to be a large number of strains of this organism in Tunis. SÉDAN & HERMANN[24] describe an operation whereby the cornea is completely buried beneath a conjunctival flap; they have found this measure of great value in the treatment of corneal ulcers and in obstinate keratitis due to trachoma. DAVID's (25) radical operation for trichiasis somewhat resembles that

19 ABADIE (M.). Sur la prophylaxie et le traitement du trachome.—*Rev. du Trachome.* 1924. July. Vol. 1. No. 3. pp. 83–86.

20 DONNELL (N. R.). Treatment of Trachoma with Strong Solutions of Silver Nitrate.—*Arch of Ophth.* 1924. Sept. Vol. 53. No. 5. p. 433.

21 NICATI (W.). Note sur la curabilité de l'ophtalmie granuleuse par les injections stérilisantes et l'apparente spécificité d'action du sulfate de cuivre.—*Bull. Acad. Med.* 1924. Jan. 8. Year 88. 3rd Ser. Vol. 91. No. 2. pp. 62–64.

22 SÉDAN (Jean) & MORENON (Jean). Essai de la méthode de W. Nicati chez les trachomateux florides.—*Rev. du Trachome.* 1924. July. Vol. 1. No. 3. pp. 98–105. [2 refs.]

23 NICOLLE (Ch.). Recherches en cours sur la conjonctivite aigue á bacille de Weeks.—*Rev. du Trachome.* 1924. Apr. Vol. 1. No. 2. pp. 41–43.

24 SÉDAN (Jean) & HERMANN (René). Traitement des ulcéres et kératites rebelles du trachome par l'enfouissement conjonctival.—*Rev. du Trachome.* 1924. Jan. Vol. 1. No. 1. pp. 6–11.

25 DAVID (J.). A Radical Operation for Trichiasis of the Upper Eyelid. - *Arch. d'ophtal.* Dec. 1923.

advocated by PANAS, but the cutaneous surface of the lid is not interfered with, and so a visible scar is avoided. A number of diagrams make the method easy to follow.

MISCELLANEOUS.—DARIER[26] contributes an exhaustive paper on the methods of biological treatment in eye disease. An excellent abridged translation is to be found in the *British Journal of Ophthalmology* for August, 1924, p. 379. PILLAT[27] discusses milk injections in bacterial conjunctivitis.

THE LENS.—A case of complete traumatic dislocation of the lens under the conjunctiva was reported in a Hindu female as a result of a blow by a piece of bamboo in the dark. Accidents due to the people walking about in the jungle at night without lights are sufficiently common in the East to give them an almost oriental characteristic (GHOSH).[28] HAYES'[29] paper on accidents in cataract operations in China contains many good hints for the young operator, especially on the subject of prolapse of vitreous, but no allusion is made in it to blocking of the facial nerve in cataract operation or to the use of a conjunctival bridge (this *Bulletin*, Vol. 19, p. 63; Vol. 20. p. 986). Another paper full of valuable suggestion to the operator in the East is that on the after-treatment of cataract extraction by SMITH[30]. It is most interesting that he has not met with post-operative delirium or confusion of thought in China; this is quite different from Indian experience as well as from that in this country. DERBY'S[31] paper on modern aids to cataract extraction is another communication which should not be missed; he is strong on the paralysis of the orbicularis before operation and on the suture of a conjunctival flap. The last-named safeguard is also advocated by WOLFF.[32] The reviewer has for a number of years been using a conjunctival bridge and only regrets that he did not know of it during this work in the East. He would strongly reccommend it to surgeons in the Tropics. BARKAN[33] gives an account of three years' extractions performed by MELLER, of Vienna. These cases are of great interest, inasmuch as the conditions prevailing in Austria appear closely to resemble those found in some up-country Indian hospitals, for the patients were half-starved before admission, the food was bad, and the preliminary examination of the patients was sketchy and the precautions taken few. HOLLAND[34] writes on one

26 DARIER (A.). Methods of Biological Treatment. Parenteral Injections of Milk as a Stimulant to the General Defences of the Organism. Autohaemotherapy. Paraspecific Vaccinotherapy & Serotherapy. Phako-anaphylaxis.—*La Clin. Ophtal.* 1923. Mar.

27 PILLAT (A.). [Influence of Parenteral Milk Injections on Bacterial Conjunctivitis.]—*Klin. M. f. Augenh.*, 1923, vol. 70, p. 439. [Parenteral Milk Injections in Gonorrhoeal Blenorrhoea.] *Ibid.*, p. 289.

28 GHOSH (N. N.). A Case of Complete Traumatic Dislocation of the Lens under the Conjunctiva.—*Indian Med. Gaz.* 1924. Aug. No. 8. Vol. 59. pp. 408–409.

29 HAYES (Chas. A.). Accidents in Cataract Operations.—*China Med. Jl.* 1924. Feb. Vol. 38. No. 2. pp. 102–104.

30 SMITH (D. V.). The After-treatment of Cataract Extraction.—*China Med. Jl.* 1924. Feb. Vol. 38. No. 2. pp. 105–111.

31 DERBY (George S.). Modern Aids to Cataract Extraction.—*Jl. Amer. Med. Assoc.* 1923. Dec. 22. Vol. 81. No. 25. pp. 2091–2093.

32 WOLFF (Julius). A Conjunctival Apron or Safety Flap in Cataract Extraction.—*Arch. of Ophth.* 1923. Nov.

33 BARKAN (Hans). Cataract Extractions performed by Prof. Joseph Meller, of Vienna, 1919–1921. Review of Two Hundred and Forty-nine Operations. —*Jl. Amer. Med. Assoc.* 1923. Dec. 22. Vol. 81. No. 25. pp. 2086–2091. [9 refs.]

34 HOLLAND (H. T.). 100 Cataract Operations performed in one day at Shikarpur, Sind, India.—*Arch. of Ophth.* 1924. Mar. Vol. 53. No. 2. pp. 155–161.

hundred cataract operations performed in one day in an Indian station by Dr. Fisher of Chicago. The latter surgeon also contributes a paper on the subject to the *Indian Medical Gazette*.[35] The preliminary examination does not appear to have been very thorough and the results obtained will arouse some criticism in the minds of Western surgeons. The contention would be that the conditions under which the operations were done render a more scientific technique impossible. There may be something in this argument, but to the reviewer's mind the crying need of the East is not so much to pile up huge numbers of cataract cases as to keep the standard of the work done high; this is all the more necessary at a time when European control is being rapidly and steadily lessened in the medical direction of affairs in India. A case of proptosis complicating a cataract extraction is dealt with by Rao.[36] Sedan[37] met with a diabetic cataract which ran its course up to complete maturity in one month. Holth[38] presents an illustration of an Arabic bronze needle which he believes to have been used for the couching of cataract in the period immediately following the Mohammedan conquest of Palmyra.

Glaucoma.—Holland[39] publishes a family tree of hereditary glaucoma affecting three generations. A woman, her four sons and one grandson all suffered from double glaucoma of the congestive type; the characteristic phenomenon of "anticipation" is suggested by the records. Such histories are not unknown in Europe, but this is probably the first to come from the Tropics. Glaucoma is so common in the East that Harston's[40] review of the whole subject as it presents itself in China is worthy of careful study by those who work in the Tropics. It is necessarily dogmatic, but will probably be all the more valuable for that to those who have to work very much on their own.

Fundus Lesions.—Terrien[41] attributes a bi-lateral optic atrophy to the action of an anti-typhoid vaccine given a few hours earlier. It is important to remember that cases of keratitis, iridocyclitis, choroiditis, etc., have been recorded as following anti-typhoid inoculations. Fortunately such occurrences are rare, and, furthermore, the risk involved is infinitesimal when weighed against the great advantages of the inoculations.

Woods & Moore[42] have observed 241 syphilitic patients who had received more than 3,000 injections in all of tryparsamide (a pentavalent arsenical compound allied to atoxyl and arsacetin). In 10·2 per cent. of the patients there was dim sight or dazzling alone, while

35 Fisher (W. A.). A Day in the Shikarpur Eye Clinic.—*Indian Med. Gaz.* 1924. May. Vol. 59. No. 5. pp. 235–237.

36 Rao (B. K. Narayan). Some Interesting Eye Cases.—*Indian Med. Gaz.* 1924. Aug. Vol. 59. No. 8. pp. 409–410.

37 Sédan (J.). [Diabetic Cataract commencing and becoming completely Mature in a Month.]—*Rev. Gén. d'ophtal.* 1923. Aug.

38 Holth (S.). An Arabic Bronze Needle from Antiquity for Depression of Cataract.—*Brit. Journ. Ophth.* 1924. June. Vol. 8. No. 6. p. 266.

39 Holland (H. T.). Hereditary Glaucoma affecting Three Generations.—*Indian Med. Gaz.* 1924. Aug. Vol. 59. No. 8. p. 408.

40 Harston (G. Montague). Rational Procedure in operating for Glaucoma, with Special Reference to Elliot's Trephine Operation and Law's New Operation.—*China Med. Jl.* 1924. Jan. Vol. 38. No. 1. pp. 12–24. With 6 figs.

41 Terrien (F.). Bi-lateral Optic Atrophy and Anti-typhoid Vaccination.—*Arch. d'ophtal.* Feb. 1923.

42 Woods (Alan C.) & Moore (Joseph Earle). Visual Disturbances produced by Tryparsamide.—*Jl. Amer. Med. Assoc.* 1924. June 28. Vol. 82. No. 26. pp. 2105–2111. With 2 figs. [11 refs.]

in a further 5·5 per cent. there was contraction of the visual fields in addition to the presence of the above subjective troubles. The visual disturbances did not appear to be closely dependent upon the dose given; nor did disease of the central nervous system appear to predispose to the risks involved in the administration of the drug. Pre-existing syphilitic disease of the optic nerve does not necessarily contra-indicate the treatment. The writers hold that the use of tryparsamide should be limited to the treatment of trypanosomiasis and of neuro-syphilis, and they lay stress on the value of the services of a competent ophthalmologist to the physician in the management of these cases—the valuable lesson of team-work again.

General Diseases.—*Beriberi.* Son[43] records two cases of haemorrhages surrounding the optic disc which he attributes in all probability to intoxication from some unknown poison occurring in beriberi. One was a male aged 20, the other a female of 23.

Cholera.—Mukerji[44] met with a suppurative panophthalmitis occurring three weeks after a severe attack of cholera. He believes it to be a case of endogenous suppurative choroiditis, the infection being conveyed by a septic embolus which lodged in a choroidal vessel.

Diabetes.—Roberts[45] deals with the increase of hyperopia met with in diabetes and furnishes notes of five cases. He thinks that the phenomenon is due to changes in the lens and vitreous. The loss of vision was coincident with the diminution or disappearance of sugar in the urine. He discusses the whole question.

Dysentery.—Jacobides[46] discusses the visual disturbances which have been found to follow strong injections of emetine; the symptoms observed were lachrymation and slight congestion of the bulbar conjunctiva, photophobia, impaired visual acuity, mydriasis, the loss of the visual fields, especially on the temporal side, central scotoma, and periorbital pain. The retina and papilla were hyperaemic at an early stage, whilst later there were pallor of the disc and constriction of the retinal vessels. Recovery occurred in from two to three weeks. Ferguson[47] met with amblyopia in a patient who was suffering from amoebic dysentery, and who had undergone emetine treatment. Complete visual acuity was eventually recovered. Zoeller & Manoussakis[48] have studied the influence on sensitized animal eyes of the instillation of a concentrated emulsion of the Shiga bacillus. A kerato-conjunctivitis resulted and ended in recovery. A number of interesting points are placed on record.

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43 Son (Yuko). [On Beriberi Weak Vision complicated with Retinal Haemorrhages.]—*Chuo Gankwa Iho (Central Jl. Ophthalm.).* 1924. Vol. 16. No. 1. [Summarized in *Japan Med. World.* 1924. Apr. 15. Vol. 4. No. 4. p. 102.]

44 Mukerji (S. K.).—A Case of Suppurative Metastatic Choroiditis after Cholera.—*Calcutta Med. Jl.* 1924. April. Vol. 18. No. 10. pp. 708–709.

45 Roberts (W. H.). Increase of Hyperopia in Diabetes.—*Amer. Jl. Ophth.* 1923. Apr. Vol. 6. No. 4.

46 Jacobides (Alexandria). Troubles visuels à la suite d'injections fortes d'émétine.—*Arch. d'ophtal.* 1923. Nov.

47 Ferguson (Arnold). A Case of Amblyopia due to Amoebic Dysentery with Complete Recovery.—*Brit. Jl. Ophthalmology.* 1924. Oct. Vol. 8. No. 10. p. 467.

48 Zoeller (Chr.) & Manoussakis. De la kérato-conjunctivite expérimentale dysentérique.—*C. R. Soc. Biol.* 1924. July 4. Vol. 91. No. 23. pp. 257 258.

Leprosy.—Luther PETER[49] has studied a case of leprotic nodular iritis with the aid of a slit-lamp and records the following interesting features: (1) There was no invasion of the skin of the lids or of the conjunctiva. (2) Vessel and ciliary congestion were absent despite involvement of the ciliary body. (3) the microscope revealed a superficial punctate keratitis: (4) a tendency of the superficial cornea to spread to the deeper layers of the cornea, and (5) a nodal iritis totally different from other forms of plastic and serous iritis.

Malaria.—AMAT[50] describes a case as malarial retinitis and WORMS & PESME[51] attribute two cases of optic nerve atrophy to the same disease. It is necessary to scrutinize all such records very cautiously before accepting malaria as the cause of the phenomena, since there are so many possible sources of error. BOLLACK[52] contributes a résumé of the subject of quinine amblyopia, the most important statement in the paper being that the condition is very often followed by a severe retraction of the visual field, which makes orientation very difficult for the patient.

THE PRACTICE OF OPHTHALMOLOGY IN THE TROPICS.—LING[53] computes that there are between sixteen and twenty million blind or nearly blind people in China, whilst there are only two or three schools for the blind, all of which have been founded by Western Missions. Thirty per cent. of the Chinese have trachoma. There are 1,500 Western-trained Chinese physicians practising in China, of whom not more than 10 or 12 devote themselves to ophthalmic practice. The number of schools and of students is increasing rapidly whilst the eyes of the children are left uncared for. The outstanding needs are (1) a campaign against trachoma, and (2) the systematic correction of refractive errors in the schools. He urges that this is a matter for the Ministry of Education to take up. LOSSOUARN[54] has studied the injuries of the eye produced by certain powders which the Chinese are accustomed to introduce for the purpose of ocular medication. These powders vary in colour, are flavoured with menthol, and are mainly composed of calcium carbonate, prepared by powdering oyster shells. In one group of his cases there was an acute kerato-conjunctivitis with the usual serious complications of the traumatic forms of this trouble. In another, the symptoms were very chronic indeed, though corneal ulceration was sometimes present. HENDERSON in a review of this article in the *Brit. Journ. Ophthal.* for July, 1924, states that the Chinese barbers scrape the eyelids with filthy bits of wood as a routine practice, and that they thus spread trachoma.

R. H. Elliot.

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49 PETER (Luther C.). Nodular Iritis due to the Bacillus of Hansen (Leprosy). Slit Lamp Studies.—*Trans. of Ophth.* 1924. May. Vol. 53. No. 3. p. 258.

50 AMAT (M. Marin). "Malarial Retinitis."—*Siglo Med.* Madrid. 1923. May 12. Vol. 71. p. 480. Summarized in *Jl. Amer. Med. Assoc.* 1923. Aug. 4. Vol. 81. No. 5. p. 427.]

51 WORMS & PESME. [Complications oculaires du paludisme.]—Communication to *Congrès de la Soc. française d'Ophtalmologie* (*Paris*, 12-15 Mai 1924). [Report by Dr. G. COUSIN in *Presse Méd.* 1924. May 31. Vol. 32. No. 44. p. 482.]

52 BOLLACK (J.).—Les troubles visuels dans l'intoxication par la quinine.—*Medecine*. Paris. 1924. Jan. Vol. 5. No. 4. pp. 278-279.

53 LING (W. P.). A Plea for the Conservation of Vision in China.—*Nat. Med. Jl. China.* 1924. Feb. Vol. 10. No. 1. pp. 20-24.

54 LOSSOUARN (Pekin). A Study of Eye Injuries produced by Chinese Powders.—*La Clin. Ophtal.* 1923. June.

TUBERCULOSIS IN THE TROPICS.

KÉRANDEL. **La tuberculose chez les indigènes dans les colonies françaises.** *Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille,* 11–17 *Septembre* 1922. *Comptes Rendus.* pp. 114–115.

This is a summary of a paper published *in extenso* in the volume of Reports of the Congress, page 128.

Kérandel, dealing with the clinical features of tuberculosis in the different colonies, states that the pulmonary localization is the most common everywhere. Amongst African negroes, the ganglio-pulmonary type associated with infancy in Europe and peritoneal infections with adhesions are the most frequent manifestations of the disease. In the Annamites and Hovas, it is usual to observe the chronic type of tuberculosis characteristic of Western Europe. Amongst the Canaques, the pulmonary form is preceded by a prolonged and severe involvement of the lymphatic glands.

Since it is usual for the mothers to nurse their children at the breast, the question of infection by contaminated cow's milk does not come into consideration ; and the slight importance of this source of infection is still further emphasized by the fact that the Baras, a tribe situated in the south of Madagascar, completely escape tuberculosis although they consume unboiled milk derived from intensely infected herds.

Kérandel is doubtful about the effects of climate except that the dry air of the Sudan seems to militate against infection. He finds no direct connection between malaria and the spread of tuberculosis, nor between alcohol and the extension of this disease. He finds reason to think that syphilis, with its tendency towards fibrosis, leads to a chronic course in tuberculosis and thus favours the spread of infection by "carriers."

"Le seul facteur étiologique qui se retrouve partout avec une constance impressionnante est la qualité de l'habitation. Partout où elle règne, la tuberculose est invariablement liée au manque d'air et de lumière, à la malpropreté, au surpeuplement et à la promiscuité dans l'habitation."

S. L. Cummins.

LASNET & TRABAUD. **Fréquence et évolution de la tuberculose parmi les divers contingents de l'armée du Rhin.** —*Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille,* 11–17 *Septembre,* 1922. *Comptes Rendus.* pp. 121–128.

The extreme susceptibility to tuberculosis of the Senegalese as compared to the other elements of the Rhine Army is well brought out in the following table :—

Incidence of Tuberculosis per 1,000 *Men during* 12 *Months—by Races.*

Français	9·55
Marocains	11·73
Arabes	13·33
Annamites	15·31
Malgaches	18·88
Senegalais	86·07

The authors find that these acute Senegalese cases expectorate relatively few bacilli in comparison with the others, and tabulate their observations as follows :—

Results of Sputum Examination in Tuberculous Patients—by Races.

Races.	Broncho-pulmonary Forms.	Sputum positive.	Percentage of Positives.
French	1,082	245	22%
Moroccans	50	13	26%
Arabs	86	79	20%
Annamites	30	9	27%
Malagasy	29	8	27%
Senegalese	131	15	11%

The infantile type of lesions found post-mortem in these patients is again insisted on ; and the interesting point is made that it is rare to find foci of infection at the apices of the lungs ; an observation that appears to harmonize with that of Opie on the pulmonary lesions of childhood. In the Arab troops " the resistance is greater through longer contact with Europeans " and the clinical picture does not differ much from that which is met with in Europe. The paper gives full particulars as to the administrative methods of disposal of tuberculous cases from the Rhine Army.

S. L. C.

Guérin (F. H.) & Lalung-Bonnaire. **Recherches sur la tuberculose pulmonaire en Cochinchine.**—*Far Eastern Assoc. Trop. Med. Trans. Fifth Biennial Congress Singapore 1923.* pp. 737–752. [2 refs.] and *Rev. d'Hygiène.* 1924. Apr. Vol. 46. No. 4. pp. 336–353.

This important communication amplifies and confirms the enquiries of Bernard, Koun and Meslin* (1912) and throws much light upon the tuberculosis of Cochinchina. Tuberculosis is well known to the Annamites under the name of Binh-Ho-Lao (Consumptive Coughing Sickness) and they believe that it has existed amongst them from time immemorial. There exist Chinese treatises, dating back to very ancient times, in which pulmonary tuberculosis in its various forms is described in minute detail ; and it is natural to suppose that the Annamites, through their close association with the Chinese, must have had numerous opportunities of becoming infected -if, indeed, the disease was not endemic amongst them even apart from such contamination. Evidence from Missions long established in Indochina, as also the observations of medical men, such, for instance, as Lalluyaux d'Ormay (1860) and Hénaff (1903), quoted by the authors, indicate that tuberculosis has been observed as a wide-spread disease of the Annamites ever since Europeans have had occasion to interest themselves in native ailments. The authors place on record a total of 7,708 tuberculin tests carried out by them on native populations, the children of urban and provincial schools and upon various social groups, the test being executed with the tuberculin of the Pasteur Institute diluted in thrice its volume of neutral glycerine.

* Bernard (Noël), Koun (L.) and Meslin (Ch.). Épidémiologie de la tuberculose en Annam. *Bull. Soc. Path. Exot.* 1912. Vol. 5. pp. 234–240.

The scarifications are made with a vaccinostyle and a "dry" scarification serves as a control. Results are read between the third and fifth day. The following table, extracted from a fuller one in the text, shows the *percentages of positive cuti-reactions*, by age groups, for 2,918 persons of various ethnic groups in the town of Cholon.

Age groups.	von Pirquet positives per cent.
0– 5 years	23·64
5–10 ,, ...	44·68
10–15 ,, ...	68·46
15–20 ,, ...	71·15
20–25 ,, ...	81–90
25–30 ,, ...	87·20
30–35 ,, ...	91·78
Over 35 ,, ...	91·72

Von Pirquet statistics for various schools are also given and exhibit a marked difference between the high percentages amongst the day scholars of Cholon, who live, in the intervals of classes, in surroundings exposing them to frequent infections, and those of the Provincial schools where the children inhabit country homes and live in more hygienic surroundings. The findings serve to demonstrate the importance of home infection as the principal source of tuberculosis in Cochinchina, a conclusion which is supported by the rarity of bovine infections and by the known fact that the natives do not drink cow's milk. The wide-spread character of the disease amongst the Annamites is emphasized in the results of tuberculin tests. The clinical type, too, is frequently the chronic ulcerative variety of pulmonary tuberculosis familiar in European countries, although there appears to be a considerable number of acute progressive cases, as in all countries where a large proportion of the population is engaged in agricultural pursuits. In proof of the suggestion that the type of tuberculosis in the towns tends to resemble that of Western Europe is the fact, recorded by the authors, that 40 per cent. of the sputa examined contain the tubercle bacillus. Education in hygiene, the early recognition of cases, the isolation of patients in large hospitals, the protection of infants and children from infection, and the initiation of "Oeuvres Grancher," are advocated as means by which the disease can be combated in Cochinchina.

S. L. C.

Heydon (G. M.). **Tuberculosis in Natives of the Territory of New Guinea.**—*Med. Jl. Australia.* 1924. May 3. 11th Year. Vol. 1. No. 18. (Supplement.) pp. 277–279.

This short paper is of real value, as it records careful post-mortem observations and extensive tuberculin tests, thus providing a true idea of tuberculosis as it exists amongst the natives of New Guinea. Of 1,679 adult natives estimated to be over 15 years of age, 520, or 29·9 per cent., were positive to von Pirquet; of 353 children, 48, or 13·6 per cent., gave a positive reaction. The percentage of positives, especially amongst women and children, was definitely higher amongst the "indentured labour" group than amongst the free local natives from villages close to Rabaul. Of 116 newly recruited boys tested,

only eight, or 6·9 per cent., gave a tuberculin reaction. It will be seen, therefore, that the percentage of positive reactions in New Guinea is very low, more especially in the natives furthest from contact with Chinese—thought by Heydon to be the principal source of infection—and Europeans. As was to be expected in such a community, the post-mortem results show a tendency to the "infantile" type of tuberculosis. Of 98 autopsies on natives, 22 were found to have died from tuberculosis and the disease was found to be present in seven patients dying from other causes. "Many of the cases were examples of very acute and rapidly spreading disease, with great tendency to generalization." Of the 29 cases dying from or with tuberculosis, five showed lymphatic gland lesions only, four were cases of tuberculous meningitis, six had purely thoracic disease and *fourteen* had died of generalized tuberculosis. This paper is of great interest and value and it is hoped that we may have still further observations from the pen of Dr. Heydon.

S. L. C.

D'Anfreville de la Salle (L.). **La tuberculose au Maroc.**—*Presse Méd.* 1924. June 28. Vol. 32. No. 52. (Supplément.) pp. 1091–1093.

At a conference of the Governors of the French colonies of North Africa, held in April last, a resolution was passed begging Parisian doctors to refrain from advising tuberculous patients to go to Morocco. This resolution was based on the now almost universally accepted opinion that the hot and dusty climate of the country, subject to violent storms and exceedingly trying at certain times of the year, is quite unsuitable for all cases of pulmonary consumption other than the resistant fibrotic types that tend, everywhere, to get on fairly well. There is also the fact to be considered that the advent of "open" cases is a source of great danger to the susceptible native population; and that there are very few openings for sick or debilitated persons to find lucrative employment. If, for special reasons, tuberculous patients are obliged to go to Morocco, they should avoid the coast towns and select the more favourable climatic conditions of Meknés and of Marrakech.

S. L. C.

Remlinger (P.). **La tuberculose à Tanger.**—*Rev. d'Hygiène.* 1923. Sept. Vol. 45. No. 9. pp. 789–803. [7 refs.]

Tangiers, like certain other relatively isolated towns, had long enjoyed a considerable measure of freedom from tuberculosis, but with the increase of commerce and the added opportunities for contact with the outside world that began to prevail in 1912 the disease started to increase. Then came the European war and all its associated factors of overcrowding, movement of populations, spreading of germs, fatigue, want and privation, and the increase of tuberculosis became markedly accelerated. At about the same time (1912–13) that tuberculosis commenced to increase in the human population of Tangiers a similar phenomenon occurred amongst the cattle. With the introduction of infected stock from England, Holland, Spain, etc., a marked dissemination of the disease amongst the local cattle was observed.

"Non seulement la race autochtone n'a fait preuve d'aucune résistance naturelle à l'égard de ce bacille de Koch venu du dehors, mais encore—comme beaucoup d'organismes vierges—elle s'est contaminée vite et la maladie a revêtu chez elle des formes fébriles généralisées, à évolution rapide, comparables à celles qui étaient notées d'autre part en médecine humaine."

Remlinger devotes much of his charmingly written and highly interesting paper to pointing out the risks incurred by infected Europeans in going to Tangiers in the hope of cure. The high winds so frequently experienced, the rapid changes of temperature, the dust and the exciting climate combine to render the locality highly dangerous for pulmonary phthisis of a febrile and progressive type. Even chronic fibrous cases, though they sometimes do well, should avoid the sea coast and go inland. It is especially the violent dusty winds that are a source of danger in this disease. Surgical tuberculosis appears to do well.

S. L. C.

Tramini (J.). **L'infection tuberculeuse étudiée par les cuti-réactions dans le ksar d'Aïn-Sefra (Versant saharien des Hauts-Plateaux Oranais).**—*Arch. Inst. Pasteur d'Algérie.* 1923. Dec. Vol. 1. No. 4. pp. 624–626.

Aïn-Sefra is about 300 kilometres from the sea and at an altitude of 1,080 metres above sea level. The native village consists of irregularly placed masses of mud-brick houses separated by narrow twisting dark lanes and streets and including the high-walled airless courts and squares characteristic of Arab towns in North Africa. The sick mingle with the healthy and there is every facility for the spread of contagion. The towns-folk are good gardeners and raise a sufficient supply of vegetables for their own needs and for sale to the little garrison which occupies barracks and lines at a distance of 800 metres from the native quarters.

A table of tuberculin reactions is given, from which it appears that, in a total population of 1,160 inhabitants, the percentages of "positives" are as follows :—

Age.	Total Positive.	Per cent. Positive.
1–5 years	25 in 77 ...	... 32 per cent.
6–15 years	71 in 130 ...	... 54 per cent.
16 years and upwards	56 in 100 ...	... 56 per cent.

S. L. C.

Dolbey (Robert V.) & Mooro (A. W.). **Surgical Tuberculosis in Egypt. An Analysis of 2,500 Cases.**—*Lancet.* 1924. June 7. pp. 1153–1154. [2 refs.]

This short paper is of the highest interest and raises questions of fundamental importance in connexion with tuberculosis. Of 2,500 cases of surgical tuberculosis seen at the Outpatient Department, or in the wards of the Kasr-el-Ainy Hospital, 1,197, or 47 per cent., were cases of tuberculous glands (site not stated, but it is presumed that these were principally cervical lymphatic glands), 804, or 32 per cent., were cases of tuberculosis of the flat bones, 159, or 6·3 per cent., were tuberculous peritonitis. Only 340, or 13 per cent., were cases of disease of the long bones or big joints. [It is of interest to compare these

figures with those for 917 cases of non-pulmonary tuberculosis analysed by the reviewer for Wales in 1923. Here there were but 36·2 per cent. of tuberculous lymphatic glands, while "tuberculosis of bones," whether long or flat, amounted to only 8 per cent. Joints, other than spinal, on the other hand, were affected in 23 per cent. This comparison would appear to support the conclusion of the authors that, in a population with but little acquired immunity, tuberculous disease of the flat bones is more and of the large joints less common than in populations with a larger measure of acquired resistance.] In this connexion, the findings of the authors, based on the examination of human remains of different epochs, is of extreme interest; the percentage of tuberculosis of the flat bones being highest in eras of industrial activity while the long bones and large joints are more commonly affected during "agricultural" eras. The conclusions to be drawn from this important observation are an interesting subject for discussion. The authors interpret the facts as showing "that the tuberculosis of the long bones and the big joints is the result of infection by a strain of tubercule bacilli of attenuated virulence in a race that has gained its immunity; whereas the type of disease attacking the flat bones is of a new and exalted virulence in subjects with no acquired immunity." [In the opinion of the reviewer, a more probable explanation is that, in periods of industrial development, the non-immune population of agricultural areas is attracted to, or enclosed by, the growing towns, with a result that there is intensive contact infection of susceptible persons in crowded tenements and small houses of the urban type. In the "agricultural" eras, on the other hand, the resistant town populations would exhibit the clinical types characteristic of a relatively immune community; and it is probable the populations of the towns that have furnished most of the human remains which afford material for such observations as those now in question.]

The figures showing a marked increase in bovine tuberculosis in Egypt are of interest, as is the suggestion that some of the human surgical tuberculosis of that country may be of avian origin. The habits of the people would certainly favour the spread of disease from chickens to man; but, in view of the rarity of human infection with this very widely distributed bacillus, it appears rash to assume that avian infection of man is an important factor without the definite bacteriological evidence that ought to be adduced in support of the statement. The authors do not appear to have considered the question of human pulmonary phthisis as the source of surgical tuberculosis. In India, where surgical tuberculosis is rife, no other than the human source can be incriminated. What is wanted in Egypt is a careful "typing" of strains from cases.

S. L. C.

LEGER (Marcel). **La tuberculose au Sénégal; Étude historique.**—*Bull. Comité d'Etudes Historiques et Scientifiques de l'Afrique Occidentale Française.* 1922. Oct.-Dec. No. 4. pp. 529–548.

The author points out that in the many excellent papers on tuberculosis in negroes, one erroneous conclusion is almost invariably drawn to the effect that "tuberculosis is rare in Senegal." One of the chief objects in Dr. Leger's article is to disprove this contention, which is founded, as he freely recognizes, on a geographical rather than an epidemiological confusion of ideas.

In an interesting historical examination of the subject, he shows that the disease was recognized as occurring amongst Europeans in the coastal towns and amongst the natives brought in contact with them as far back as 1840; though, so unusual was it to encounter the disease amongst the inhabitants that THÉVENOT, in that year, stated frankly that the natives must possess against phthisis "une sorte d'immunité naturelle." It is interesting to note, with the author, the curious belief, at one time generally held by phthisiologists, that there existed an antagonism between malaria and tuberculosis. The celebrated Army Medical Officer, BOUDIN, who is quoted by Leger as having made great contributions to the knowledge of the diseases of Algeria, held this view strongly and expressed it as follows:—"Pour qui connaît la carte médicale de l'Algérie, la phtisie et le miasme palustre sont exactement comme les deux plateaux d'une balance." Phthisis was but rarely found in malarious localities; and, on the other hand, places noted for a high incidence of tuberculosis were found to be nearly free from malaria. [We cannot refrain from emphasizing, at this point, the probable explanation of this contrast, which has been frequently noted elsewhere, although Leger does not himself make any suggestions to elucidate it. Where malaria was rife, the white man did not settle and the native remained uncontaminated by the "White Plague." Where malaria was unknown or uncommon, the white man placed his garrison or organized his commercial system, and, here, the natives were exposed to contact with an infection against which they possessed no acquired resistance.] This theory of "antagonism" was, as Leger points out, finally exploded through the careful analyses of the facts by CRESPIN at the International Congress of Tuberculosis in 1905; when it was shown, not merely that no such antagonism exists, but that acute malarial infections favour the activity of the tubercle bacillus.

Attention is also given to the fluctuations of medical theory as to the effects of a warm and damp climate on the phthisis of Europeans. At one time the belief was almost universal that consumptive patients had everything to gain by a trip to Africa or a sea-voyage in the tropics. So potent was this view that the suggestion was made to build vast hospitals close to Algiers for the reception of consumptives from Paris, and it was only a close study of the facts by LOUIS and ANDRAL, acting for the Académie de Médecine, that led to the project being abandoned. Here again we see the observation of the rarity of tuberculosis amongst the natives misinterpreted to mean that the climate is antagonistic to the disease, not that the infection is absent save for the imported cases. Such erroneous conclusions were, of course, to be expected at a time when the infective nature of the malady was unproved and, for the most part, denied. Actual experience soon led to a complete change of opinion. In 1866, BÉRENGER-FERAUD is quoted by Leger as having reported as follows:—"Les phtisiques doivent se hâter de quitter au plus tôt le Sénégal s'ils ne veulent pas s'exposer à voir leur affection évoluer avec une extraordinaire rapidité."

It was especially through the investigation initiated by A. CALMETTE in 1910–1911 on the lines of systematic tuberculin tests applied on uniform lines throughout the African Colonies of France that the light of science came to be thrown upon the vexed question of tuberculosis in Senegal and the surrounding countries. The following quotation from Leger sums up the truth about tuberculosis as an endemic disease, and it would be well, indeed, if his words could be impressed

upon the many statisticians who continue to apply purely arithmetical criteria to pathological problems. " Par les statistiques de morbidité et de mortalité, on n'est jamais que très imparfaitement renseigné sur la fréquence de l'infection bacillaire dans un pays. Il existe, en effet, à côté d'individus malades, un très grand nombre de sujets chez lesquels les manifestations morbides manquent encore ou même resteront constamment cachées, mais pourtant chez lesquels il y a eu imprégnation bacillaire. Ceux-ci sont de sources de contamination, d'autant plus dangereuses qu'elles sont cachées et restent ignorées."

The paper closes with numerous citations from the works of Calmette, Borrel, Roubier, Teppaz, Curasson and others, with which readers of the *Bulletin* will be familiar. Leger shows that tuberculosis was at one time rare amongst the natives of Senegal, but that it is now quite common, and, in fact, rapidly increasing in the larger towns, such as Dakar and Saint-Louis, as well as in the surrounding districts. It is still very rare in the countries of the interior and of the neighbouring territories, whence recruits for the Senegalese regiments were so freely drawn during the war. He indicates the extreme difficulty of applying methods of prevention in native communities and calls upon the Government to give the matter its immediate and grave attention.

S. L. C.

Accra. **Report of the Medical Officer of Health, Accra, for the Year 1922.** [Selwyn-Clarke (P. S.), Medical Officer of Health.]—69 pp. With 24 figs. & 2 charts. 1923. London: Waterlow & Sons, Ltd., London Wall. [Price 4s.]

This Report possesses the merit, rare, alas, in the Sanitary Reports of our Tropical Dependencies, of a careful review of the question of tuberculosis amongst the native races constituting the bulk of the population under consideration. It includes a series of Tables dealing, from 1913 onwards, with the tuberculosis by sexes, by occupations, by races and by clinical types; and a Table showing the relation of density of population to incidence of fatal tuberculosis is also given. The Report includes an analysis of the post-mortem findings in 24 cases examined during 1922 and is illustrated by two photographs and a chart. The statistical matter is, of course, vague, as was bound to be the case. The difficulties of obtaining accurate details as to age incidence, clinical type, and so forth, in a native population is always great. But the fact remains that a genuine effort has been made. It is safe to say that if Reports on similar lines were forthcoming from all our Colonies and Dependencies, our knowledge of tuberculosis as a disease of the Empire would be greatly increased.

Several interesting and important facts come to light in the Report. It is clear that the mortality from the disease is increasing amongst certain sections of the native population of Accra, this increase being most marked in the Northern Territory labourers, Kroos and Hausas. The indigenous race of Gas, having been longer in contact with Europeans, has acquired, as the author points out, a certain degree of immunity, and suffers less in consequence.

The clinical type appears to be, on the whole, very acute. Even the cases described by the author as " chronic " are noted as dying much more rapidly than do Europeans with comparable lesions, whilst the " acute " cases present the typical African type of progressive

and rapidly fatal tuberculosis so well described by BORREL in the Senegalese. Attention is called to the fact that only one case in thirty-seven suffered from haemoptysis, whereas about 60 per cent. or more of European cases present this symptom. A similar observation was made by POWELL in his studies of tuberculosis amongst Indians in Bombay. (See this *Bulletin*, Vol. 20, page 185.) This absence of haemoptysis is, we believe, characteristic of the rapid caseo-necrotic tuberculous processes in the lungs of non-immune races, and is associated with the fact that the disease is too rapid in its course and too diffuse in its spread through the pulmonary tissue to allow of the ulcerative cavitation that slowly leads to the haemorrhages familiar in Western Europe. The marked and rapid wasting that occurs once that disease has obtained the upper hand is well illustrated in a photograph (reproduced) of a Kroo labourer suffering from phthisis of two months' duration. This picture will be recognized as typical of the disease in African races by all familiar with the question.

A Kroo labourer suffering from Phthisis of two months' duration.
(Photograph taken 10 days after admission to Contagious Diseases Hospital.)
[Reproduced from *Report of the Medical Officer of Health, Accra, for the year 1922.*]

While there is so much to praise in this interesting Report, there are, of course, several points as to which criticism may be excused. In Appendix H, for instance, there appears no reason to give separate headings to "phthisis," "pulmonary tuberculosis" and "phthisis

pulmonalis" ; whilst the heading "tuberculosis" should be an inclusive one, not a sub-heading. In the analysis of post-mortem findings, while thoracic and cervical glands are quoted as diseased in one or two instances, we are given no information on this point in the other cases. It would have been of interest to know whether the mediastinal and bronchial glands were enlarged and caseous in all these cases. This is a point which should be looked for in all post-mortems on African natives.

S. L. C.

British Guiana. **The British Guiana Society for the Prevention and Treatment of Tuberculosis. Seventeenth Annual Report of the Committee, 1923.** Gonsalves (M.), President, & Haslam (John F. C.), Hon. Sec.]—12 pp. 1924. Demerara: Printed by "The Daily Chronicle," Ltd.

This brief Report, while showing that British Guiana is engaged in a serious effort to cope with tuberculosis on modern lines, is of little interest to the student of tropical tuberculosis, since it deals chiefly with the administrative work of an anti-tuberculosis scheme and contains but few references to the clinical or epidemiological aspects of the disease. The death rate has fallen steadily in the last sixty years. It was 2·36 per 1,000 living in the quinquennial period 1876–1881 and had fallen to 1·31 in 1923. This rapid fall is of interest in view of the racial composition of the population. Of 276 tuberculous persons attended in 1923, 161 were of the black race, 46 of mixed race, 56 were East Indians, 12 Portuguese and 1 Chinese. It is worth notice that in a community where the black race predominates, the same tendency to the acquisition of resistance, as indicated by a falling death rate, should be manifest as in European countries.

S. L. C.

Ferreira (Clemente) **Liga Paulista contra a Tuberculose. Exercicio de 1923. Relatorio apresentado á Assembléa Geral na sessão annual ordinaria de 27 de Maio de 1924.** 48 pp. With 1 chart. 1924. São Paulo: Typ. Cardoso, Irmão & Cia. Rua da Gloria N. 64.

The greater part of this Report deals with the statistics of the Clemente Ferreira Model Tuberculosis Dispensary and its routine work. Interesting as it is, and calculated to excite the admiration of the reader for what is being accomplished by this Brazilian Anti-tuberculosis Scheme, it can hardly be said to have any marked bearing upon the problems of tropical tuberculosis as usually understood. Of importance, however, both from its practical bearing on the treatment of tuberculosis and in relation to the allied disease, leprosy, is the portion which deals with the use of chaulmoogra oil and sodium morrhuate. The administration of the chaulmoogra oil, according to Heiser's formula, was tried on only five patients, of whom one got much better and returned to work, three abandoned the treatment quite early in its course and one was quite unaffected. Ten patients treated with sodium morrhuate showed appreciable improvement, one of them becoming cured to all appearances.

An allied preparation, *Gadusan*, in which cod liver oil is brought into a colloidal state, was also tried on a similar group of 13 cases, five of whom derived no benefit from it, while ten improved. Of these latter, seven were but slightly better, one markedly improved; and in two, the tubercle bacilli disappeared from the sputum.

S. L. C.

FREW. **A Note on the Use of Human Tuberculin as an aid to Diagnosis in Tubercular Disease among Natives.**—*Proc. Transvaal Mine Med. Officers' Assoc.* 1923. Sept. Vol. 3. No. 5. pp. 1–2.

Dr. Frew reports that he has obtained valuable diagnostic information by the subcutaneous tuberculin test in natives. The preparation used by him was "Old Human Tuberculin," obtained from Duncan Flockart & Co., of Edinburgh, and his dosage was as follows:—(1) 0·0025 cc., (2) 0·005 cc., (3) 0·01 cc.; the inoculation being, in each case, made up to 1 cc. with normal saline. The interval between doses would appear to have been 24 hours. No reaction was counted as positive if the temperature did not rise above 100° F.

Of 61 patients tested, 25 were regarded as positive. Of these 25 positive cases, 18 were subsequently examined by the Miners' Phthisis Bureau, 13 being found to have tuberculosis and 5 being regarded as free from the disease. Two of the negative cases, both very ill, were subsequently found to have tuberculosis—their reaction, no doubt, being eliminated by the intensity of the infection. [The reviewer ventures to suggest that it would be safer to use a smaller initial dose, say 0·0002 cc., as recommended by BANDELIER and ROEPKE, before proceeding to those now used by Frew; and a longer interval than 24 hours between the test doses is certainly to be recommended—at least 48, preferably 72 hours. If the temperature is carefully recorded beforehand, a rise *up to* 100° F. should be quite sufficient for a "positive."]

S. L. C.

ROGERS (Leonard). **Croonian Lectures on Researches on Leprosy and their Bearing on the Treatment of Tuberculosis. Lecture IV. The Use of Chaulmoogrates and Morrhuates in the Treatment of Tuberculosis.**—*Lancet.* 1924. June 28. pp. 1297–1302. [24 refs.]

The work of E. L. WALKER and M. A. SWEENY in 1920 (see this *Bulletin*, Vol. 17, p. 277), confirmed and extended, later, by that of Otto SCHOBL in the Philippines, showed clearly that the sodium salts of certain of the fractions of the fatty acids of chaulmoogra oil, proved by Rogers to be effective in leprosy, had a definite and specific action in inhibiting the growth of various acid-fast bacteria on artificial media. As the results of their observations, WALKER and SWEENEY were led to think "that it can be concluded with reasonable certainty that any therapeutic action which chaulmoogra oil may have in leprosy is due to its direct antiseptic and bacteriological action on *B. lepra*."

Stanley GRIFFITH, however, working with sodium morrhuate added to solid media, proved that this preparation had no inhibiting effect on the tubercle bacillus. In view of the numerous observations tending to show that the morrhuate was of specific value in the treatment of leprosy, this latter finding was difficult to harmonise with the

" antiseptic " theory of WALKER and SWEENEY ; and, in fact, Rogers, in 1921, struck by the progressive improvement which often followed a single reaction-producing dose of either the gynocardate or the morrhuate, had been driven to conclude that the clinical findings " appear to be best explained on the theory that, during the extensive breaking down of the bacilli, antigens are formed, which bring about the subsequent prolonged improvement." This conception, alone, however, did not quite explain why the morrhuate, which does not lead to " extensive breaking down of the bacilli " *in vitro*, should be effective *in vivo*.

Investigations by A. SHAW-MACKENZIE, however, showing that the addition of 3 per cent. solutions of sodium gynocardate, morrhuate or oleate to a pancreatic extract " doubled the fat-splitting effect of the pancreatic lipase on an emulsion of olive oil at blood heat " led this observer to suggest " a direct stimulating action of tissue liposis in, at any rate, partial explanation of the therapeutic effect of sodium morrhuate and sodium gynocardate on acid-fast bacilli." Acting on this idea, Rogers obtained from E. MUIR a set of blood sera from Indian leprosy cases, treated and untreated, and estimated their lipase content with the following results: —

Type of Case.	No.	Highest figure.	Lowest figure.	Average.	Remarks.
Nodular, untreated ...	3	0·07	0·00	0·033	Very low.
Nodular, treated ...	9	0·29	0·08	0·22	Normal.
Nerve, treated	8	0·26	0·17	0·19	Normal.

These results are very striking, and, if confirmed on a larger series, must be taken to prove that in leprosy, as in tuberculosis, the blood lipase is very low and that treatment with the gynocardates or the morrhuate tends to restore it to normal in this respect. Subsequent work by E. MUIR supports this opinion and shows that a low lipase content of the blood in leprosy is of bad prognostic import. The experiments suggest, too, that SHAW-MACKENZIE'S theory is the one which most successfully covers the facts, though the observation of Professor J. B. COLLINGWOOD, that lipase has no appreciable action on tubercle bacilli *in vitro*, shows that it is necessary to regard the action of the chaulmoogrates and morrhuates as a " vital tissue action " if the theory is to be made applicable. Rogers is fully alive to the fact that the treatment of tuberculosis by substances acting by the disintegration of the bacilli and the liberation of antigenic substances is a much more difficult matter than that of leprosy, owing to the frequent involvement of organs essential to life and health and the grave risk of dangerous focal and general reactions, to say nothing of the possibility of exciting septicaemic processes and secondary bacterial deposits. He quotes both animal experiments and human tests as to the action of the chaulmoogra derivatives in tuberculosis and concludes that, on the whole, the results are very disappointing. The personal experience of the reviewer, so far as it goes, confirms this view for pulmonary tuberculosis ; but it would be a pity to abandon attempts to exploit these highly active substances in such localized processes as lupus in which " reaction " appears to be fairly well tolerated and to assist in ultimate cure.

The most interesting and important part of the paper is that which deals with " further clinical trials of sodium morrhuate " in tuberculosis. Here, as was certain to be the case, the results reported are far from uniform ; in fact, sometimes contradictory, varying from the very optimistic records of the late P. W. R. BOELKE and of Dr. John

Hume to the provisional verdict of "inconclusive and not very encouraging" of R. C. Wingfield and the "harmless and of no benefit" of Fenwick Jones. [In a disease like tuberculosis in which the clinical picture is of infinite variety and the prognosis, under the ordinary conditions of life and apart from any kind of treatment, as various as the clinical types, attempts to evaluate the action of "curative" agents is fraught with difficulty. The physician is faced, on the one hand, with the fact that certain cases tend to establish their own immunity and to get well of themselves, while others are doomed to go down hill rapidly owing to factors which are quite beyond therapeutic control. It is just as hard to be sure that a "success" is to be justly claimed as that a "failure" of the patient to improve is, in reality, inherent in the treatment. In this dilemma, it is clear that final knowledge as to the value of any given form of treatment can only be obtained by a prolonged trial in carefully classified cases, under the observation of men with real knowledge and experience of the disease.] It may safely be said that a year or two will see the end of any treatment which fails to satisfy the needs of the experienced clinician. The reports quoted by Rogers of considerable numbers of cases treated by Dr. Charles Lloyd and Dr. T. Williams, both of whom are favourably impressed by their results, are decidedly encouraging, especially since, in the knowledge of the reviewer, both these workers continue to be impressed with the value of sodium morrhuate in suitable cases.

There remain to be tried the ethyl ester morrhuate and the alternate administration of courses of the morrhuate and tuberculin, the latter method having given encouraging results at Fazakerley Hospital in the hands of Dr. Rundle and his colleagues. There can be no doubt of the *activity* of these new preparations suggested by Sir Leonard Rogers; and this fact is sufficient, in itself, to justify their thorough trial in the treatment of tuberculosis in all its forms.

S. L. C.

Bassett-Smith (Percy W.) & Gloyne (S. Roodhouse). **Excess of Vitamin B in the Treatment of Experimental Tuberculosis.**—Reprinted from *Tubercle*. 1924. June. 5 pp. With 7 charts in text. [4 refs.]

Nine guineapigs in all, four at Victoria Park and five at the Bland Sutton Institute, were used in these experiments, five serving as "controls." In the test animals and the "controls" alike, a generous diet of crushed oats and green vegetables was given. In the "test" group, 8 grams of "marmite," a commercial yeast preparation rich in Vitamin B, was given daily in addition, being made into an emulsion with water and mixed in with the oats. The test and control animals, after some weeks of preliminary observation, were inoculated subcutaneously with a small dose of virulent "human" tubercle bacilli. All died, in periods varying from 112 to 209 days after the inoculation (two of the test animals of secondary pneumococcic infection, but whether tuberculosis was also present at post mortem examination is not stated)*; and in both the Victoria Park test animals and in one of the test animals at the Bland Sutton Institute, generalized tuberculosis was present.

* Sir Percy Bassett-Smith says that there was no evidence of tuberculosis post-mortem.

It is impossible, as the authors admit, to draw any conclusions from this small series of experiments. Subcutaneous inoculations of from 125,000 to 250,000 virulent tubercle bacilli are, in themselves, so deadly a dose for guineapigs that they leave no margin for the evaluation of therapeutic effects.

S. L. C.

Row (R.). **Further Observations on Tubercle Bacilli subjected to Autolysis, with Special Reference to the Antigenic Value of their Lipased Products.**— *Indian Jl. Med. Res.* 1924. July. Vol. 12. No. 1. pp. 195–197. [2 refs.]

This paper follows on a publication by the same author in the *Indian Journal of Medical Research* (1922).

If a mass of tubercle culture be self-digested for several weeks in a medium of normal saline and then, after treatment with petroleum ether, set aside to stand, it separates into three layers. The lowermost of these is unimportant, consisting almost entirely of the salt solution in which the digestion had taken place. The topmost layer, amber coloured, consists of the petrol ether which has taken up the lipased products of the fatty or waxy components of the bacilli. When evaporated after filtration, this layer yields "a waxy brownish-red mass" of fatty acids. Neutralized with alkalis, it yields a colloidal solution which has been found quite inert both as an antigen for complement-fixation tests and also for production of antibodies. The middle layer, consisting of a "whitish cake" of agglutinated tubercle bacilli, for the most part deprived of their acid-fast properties, is of greater interest. "Repeated washing of this mass, after drying, with xylol reduces the acid-fast residuum to a minimum and yields a product which has definite antigenic value."

Rabbits and guineapigs tolerate up to 5 milligrams given subcutaneously and (rabbits) 2 milligrams intravenously; and their sera prove to contain antibodies in considerable amount. They acquire, too, the property of resisting to varying but definite degrees subsequent doses of living tubercle bacilli in quantities that kill the controls in from 3 weeks to 3 months. The treatment of a small number of artificially infected guineapigs gave hopeful results, and preliminary trials on glandular and pulmonary cases in man appear to have shown that the injections are well tolerated and that definite improvement may be noted during the time that the vaccine is being given. Four out of eight glandular cases have done well and three pulmonary cases out of a group, the total number of which is not stated, have improved markedly after "submitting to a long course of weekly injections."

Doses of from 0·01 to 0·02 milligrams are well tolerated in human cases, a local oedematous swelling, if present, subsiding in a few days without further trouble. "The general reaction only is marked, without any reference to dose, and consists of a rise of temperature of one or two degrees during the first 24 hours." A course of at least 10 to 12 injections must be given before decided improvement can be hoped for.

It would appear, from the animal tests, that this antigen may have a future in the treatment of tuberculosis; but the number of experiments recorded is too small, and the details too meagre, to justify definite conclusions at this stage. The results of trials on man, as given, prove at least that the antigen is an active one and that it ought to be used with caution.

S. L. C.

REVIEWS AND NOTICES.

YOUNG (T. C. McCombie) [M.D., D.P.H., late Director of Public Health, Assam]. With a Foreword by ROGERS (Sir Leonard) [C.I.E., M.D., F.R.C.P., F.R.C.S., F.R.S.]. **Kala-Azar in Assam. An Account of the Preventive Operations 1910 to 1923, and Notes on the Epidemiology of the Disease in Assam and India.**—pp. viii+76. With 6 figs. 2 maps & 7 charts. 1924. London: H. K. Lewis & Co., Ltd. [Price 7s. net.]

This is a well-written and most interesting account of the author's fight with kala azar during the fourteen years he was in charge of the sanitary department of Assam, which resulted in the most gratifying success both in treatment and prevention. Sanitary prevention was continued on the lines laid down by Dodds PRICE in the early nineties, isolation of the infected and removal of the uninfected inhabitants from the infected area to a new site, a distance of less than a quarter of a mile proving sufficient to arrest the spread of the disease. In addition, the sanitary department treated all the infected by intravenous injections of antimony so as to destroy the infecting protozoan in its only known habitat. On Colonel Young's initiative the Assam Legislature passed a law making it compulsory that when a village or district was declared infected with kala azar :—

(1) Any infected person shall undergo a complete course of treatment.

(2) Such person's house and its contents shall be destroyed (usually by fire) or disinfected.

(3) The other inmates of such house shall be removed to an approved site.

(4) Compensation may be paid.

Migration to or from a notified area was made a penal offence.

It speaks volumes for Colonel Young's tact and the confidence with which he inspired the populace that in most cases they cordially co-operated in the enforcement of these rules. Those who elsewhere in India have had to deal with epidemics and the enforcement of sanitary regulations will be the first to take their hats off to the author.

In his preface Colonel Young pays a well-deserved tribute to the labour, skill and courage of his subordinates. The skill attained under his tuition was such that a Sub-Assistant Surgeon with the help of a single peon would give three or four injections per minute, an almost incredible rate when we know that young children formed the bulk of their patients. Although many of our text-books inculcate slow and intermittent injection of each dose of tartar emetic, accidents were conspicuous by their absence.

While we have nothing but praise for the author's account of his personal observations we cannot agree with his account of the origin of kala azar in Assam. He says "Rogers dates the first appearance of the disease in the Garo Hills at 1879." This figure, possibly a misprint, if true, would support the heresy that the Assam epidemic of kala azar took its origin from the spread of the Rangpur malarial epidemic of 1872-77 across the Brahmaputra to the Garo Hills. Dr. CLARKE, the Sanitary Commissioner of Assam, who in his Report for 1882 gave the first (an excellent clinical) account of the disease, says: "As far back as 1869 the attention of administrative officers in Assam became directed to a peculiar disease called 'Kala azar,' the ravages of which decimated and in some instances almost depopulated numerous villages." He says his details were drawn from "old reports" and a record of 120 recent cases lately visited by Mr. MCNAUGHT. He says, "the Garos give definite accounts of the invasions of their villages at periods varying from 3 to 30 years previously," that is, some villages were attacked in 1852, others at later intervals up to 1879. ROGERS quotes the above and adds that Col. MAXWELL, administrator of the Garo Hills from 1881 to 1883, a very able observer, wrote to him, "Elderly Garos have often told me their grandfathers died

of the disease." ROGERS also refers to "reports of the disease in 1869 and 1873." It is obvious that a disease known "as far back as 1869" to officials, and to natives in 1852, cannot be an extension of the Rangpur epidemic that began in 1872. The Rangpur fever cannot have been kala azar: the local doctors were satisfied it was malaria, as was ROGERS also after an exhaustive enquiry in 1897. "The fever was of the intermittent type, the majority of the population were completely prostrated by repeated attacks between May and December 1873." "Eighty per cent. of the people of Rangpur were attacked in 1874." It this were kala azar the most we could hope would be a mortality of 60 per cent., yet the next census showed a decrease of only 2·58 per cent. Further, quinine cured the Rangpur fever.

The author suggests as a possible explanation of the alleged immunity of Cachar in the Surma Valley "that the opening out of this district began only some thirty or forty years ago, before which time the population was sparse." Forty-three years ago the district was well planted in tea. The population of Cachar was then 289,425, including 87,000 tea garden coolies, mostly immigrants. More than half the population of Assam was in the Surma Valley.

Arthur Powell.

FAR EASTERN ASSOCIATION OF TROPICAL MEDICINE. **Transactions of the Fifth Biennial Congress held at Singapore, 1923.** [Edited by HOOPS (A. L.), President, & SCHARFF (J. W.), Hon. Sec. of the Congress.]—pp. xx+974. With 86 plates (2 coloured) and numerous charts in text. 1924. London: John Bale, Sons & Danielsson Ltd., 83–91, Great Titchfield Street, W. 1. [Price 40s.]

The fifth Biennial Congress of the Far Eastern Association of Tropical Medicine was opened at Singapore by the Governor of the Straits Settlements on the 3rd September, 1923, and remained in session until the 8th. Besides the local profession and the representatives of the medical services of the several States of Malaya, the other Eastern countries and places individually represented were Australia, British India (including Burma), Borneo, Ceylon, China, Formosa, Hong Kong, Indo-China, Japan, Macao, Netherlands India, Philippines, Shanghai, Sarawak and Siam. The handsome and liberally illustrated quarto volume that records its *Transactions* contains 974 pages, of which no less than 914 are occupied by original papers presented for discussion. Some of these have been, and others will be, noticed in this *Bulletin*, but here we may take a general survey of their compass.

Of the big subjects of perennial importance naturally Malaria and Beriberi—so intimately bound up with Anglo-Malayan tradition—engaged a great deal of attention, and equally naturally the aspects of malaria upon which the attention was focussed were prevention and things bearing thereon, such as Anopheles mosquitoes and their control and accurate methods of gauging enlargement of the spleen; but there are also some papers on malaria in relation to mental and nervous disorders and the malaria treatment of G.P.I. The contributions to beriberi, too, deal very much with prevention, but they also include a most appropriate essay on vitamins, and two papers on causation that dissent more or less from the generally accepted deficiency theory associated with Kuala Lumpur. The other big subjects before the Congress were Ancylostomiasis, Plague, and Leprosy. Papers on the first of these include two on treatment, and a series of studies of considerable importance on the pathological lesions and disordered functions that contribute to the gravity of hookworm infection. Among the papers on bubonic plague the detailed review of the wild rodents naturally susceptible to infection and of the exact relation

of the tarabagan to the Manchurian outbreaks may be mentioned particularly. The communications on leprosy deal largely with modern methods of treatment and also include a further contribution by Van Driel on affections of the eye in leprosy, which is based on a survey of the inmates of the asylum near Deli.

The miscellaneous papers, 35 in number, take a wide range: among subjects included are amoebiasis, helminthiasis, laboratory methods, and instruction in parasitology; antityphoid and anti-influenza vaccination, oral vaccination, and specific natural immunity; yaws, pseudotyphus and other spirochaetous-like fevers; pulmonary tuberculosis in Cochin China; smallpox and vaccination; cancer in the tropics; opium-smoking; the indigenous materia medica of China; chemical composition of gall-stones; applications of radiology; hospital construction.

Among official acts, outside the domestic and the social spheres, the Congress approved the recommendations of the Council in respect of quarantine procedure in the Far East, and certain recommendations relating to the control of beriberi—namely, that individual Governments be invited to promote further inquiry into the legal standardizing and the trade manipulation of rice, and to nominate a representative for a Beriberi Committee to report to the next Congress. It also approved a resolution requesting the Health Committee of the League of Nations to arrange, among other things, temporary interchange of sanitary personnel in the countries of the Far East.

Without flattery, these *Transactions* must be said to reflect great *kudos* on the local organizers of the Congress, and to exhibit the Far Eastern Association as a body vigorously imbued with the spirit—also Far Eastern in its nurture—of the Father of Tropical Medicine.

It may be added that the next Congress of the Association will be held in Tokyo, under the presidency of Dr. Kitasato.

A. Alcock.

Rodenhuis (Ypeus). **Over het bestaan van verschillende rassen binnen de soort *Entamoeba histolytica* Schaudinn.** [On the Existence of Different Races within the Species *E. histolytica*.]—Academisch Proefschrift. Amsterdam. 1924. 8°. pp. viii+60. With 1 plate. [80 refs.] (L. J. C. Boucher, The Hague.)

In this Dutch dissertation for the degree of M.D., the author critically examines the question whether the species *Entamoeba histolytica* be divisible into a number of diverse strains or races, distinguishable by the dimensions of their cysts—as is now generally recognized by protozoologists—or in other ways. As a result of certain new observations and measurements of his own, and a detailed discussion of previous work, he ultimately answers the question in the negative: or perhaps it would be more accurate to say that he returns a verdict of "not proven."

Most of the author's observations were made in Holland (at the Municipal Hospital at the Hague) upon "the faeces of a number of patients who had never been outside the temperate zone, and had never displayed dysenteric symptoms." After a long discussion of methods, results, and various fallacies and possibilities of interpretation—which must be consulted in the original by those interested, as the points dealt with are too multifarious for succinct summary—the author states his own views in the form of 21 conclusions, occupying rather more than three pages. Of these conclusions the following appear to be the most noteworthy or novel:—

In measuring cysts of *E. histolytica*, the unit of measurement employed should not be less than half a division on the scale of an ocular micrometer so calibrated that 1 division=1·5μ (*i.e.*, not less than 0·75μ). [This, it may be noted, is a standard originally adopted and justified by the reviewer.] Only those cysts which are approximately spherical should be measured. [This is an arbitrary restriction which tends to introduce

uniformity where it does not exist in nature.] Measurements made on cysts suspended in water, physiological saline, or iodine solution, are preferable to those made on fixed, stained, and permanently mounted specimens. [The author adduces no new evidence to invalidate the conclusions of the reviewer in this respect.]

In interpreting the measurements, and the curves constructed from them, "the arithmetic mean forms a better standard of comparison than the summit of the curve"; but determinations of the standard deviation and coefficient of variation supply useful additional information. [In this connexion it seems worth while to note the following points. If a sufficient number of measurements be made, and the material be really homogeneous (*i.e.*, if there be but one race and not a mixture of races), then the arithmetic mean and the mode of the curve will coincide—extraneous errors being excluded. But if the mean and the summit of the curve are *not* identical, then either the number of cysts measured is insufficient, or the material itself is not homogeneous—*i.e.*, we are dealing with a mixture of races.]

The cysts passed by a given carrier of *E. histolytica* show variations in size from day to day; and these variations are usually greater than would be expected if the differences were due merely to errors of sampling. Corresponding variations are shown in the standard deviation and coefficient of variation. Neither the mean diameter of the cysts, nor the apex of the curve, remains absolutely constant from day to day. [Anybody conversant with the subject and persuaded of the personal and other errors ever involved in making measurements will readily accept these conclusions: but that they furnish evidence against the existence of races in *E. histolytica* may be disputed.]

The occurrence of "strains of *E. histolytica* with small cysts" (7–9μ in diameter) supplies no evidence in favour of the existence of races, since it has not yet been proved—in the author's opinion—that these cysts really belong to *E. histolytica*. In his view, they belong, indeed, to a different species. [No new evidence is adduced in support of this opinion, from which many other workers—including the reviewer—dissent. It seems noteworthy also that the author does not account for infections in which the mean dimensions of the cysts are intermediate (ca. 9–11μ) between those of "small" (ca. 7–9μ) and "ordinary" (ca. 12μ) strains. Are these referable to yet another species? And what of the strains having cysts with a mean diameter of ca. 15μ?]

The study of familial infections gives no clear indication of the existence of diverse races.

All variations in the form of the curves made from measurements of cysts can be interpreted as due, not to the existence of races, but to "quantitatively differing effects of all sorts of environmental influences" which act upon the amoebae before encystation. [Apparently an explanation on the principle "*ignotum per ignotius*."]

"The *minuta*-form of *E. histolytica* must be regarded as an independent, saprozoic organism, living on [not *in*] the gut wall"; and, according to the circumstances in which it finds itself, it "can give rise to the appearance of histolytic forms with amoebiasis, or of cysts in the faeces. Its presence is thus not necessarily associated with ulceration of the gut wall or tissue-parasitism." In the opinion of the author, the "*minuta*" amoebae are not precystic forms, but active commensal organisms which, like *E. coli*, ingest bacteria, starch grains, and other bodies present in the faeces—including the cysts of other protozoa. [The reviewer, for one, questions and rejects such statements, believing them to rest upon errors of observation and interpretation.]

There is no evidence of the existence of pathogenic and non-pathogenic—or feebly pathogenic—races of *E. histolytica*. [As the reviewer has already attempted to demonstrate.]

But perhaps the most significant conclusion is that numbered 19. It is as follows:—

"The ascertained daily fluctuations in the average dimensions of the cysts [from a given case] are less than the greatest difference observed between the average dimensions of the cysts passed by] different cases. If this difference cannot be bridged over by further observations, then the existence of several races remains as a possibility, though it has not been proved or rendered probable by other observations." [Such an admission, however grudgingly made, surely knocks the bottom out of the case against the existence of races? At all events, those who believe in the existence of diverse races in *E. histolytica*—distinguishable by the dimensions of their cysts—may still be suffered to cling to their belief until such time as the bridge-builders on the other side have completed their work.]

The dissertation, as a whole, appears to have been written with the object of upholding the views of Dutch workers—especially those of Kuenen and Swellengrebel—on the subject under discussion. Many of the arguments which have been advanced on the other side by English workers are consequently ignored, or summarily dismissed as "improbable" on grounds which are not invariably adequate or convincing. As a piece of special pleading the dissertation is admirable, but it can hardly be regarded—and the author himself makes no such claim for it—as a final verdict on the question discussed. It has the great merit of being clearly written and well printed, and deserves the attention of all interested in the subject with which it deals. Nevertheless, the reviewer, for his part, cannot help thinking that the author's conclusions might have been different if he had studied a larger and less uniform series of infections, and if he had been able to adopt a more critical attitude towards the opinions of his mentors.

Clifford Dobell.

Mayer (Martin). **Exotische Krankheiten. Ein kurzes Lehrbuch für die Praxis.**—pp. vi.+304. With 210 figs. and 2 plates. 1924. Berlin: Verlag von Julius Springer. [Price G. M. 24; bound G. M. 25.]

Exotic disease, as offered here, is synonymous with tropical disease, the term "exotic" being considered by the author to be more perspicuous than the term "tropical"—as indeed it is, if "exotic" be assumed to mean exotic to educated countries that enjoy all the conveniences and recognize all the obligations of modern sanitation. The book is, as it professes, a compendium of such diseases, a compendium of facts—full (except for the questionable omission of bacillary dysentery), methodical, concise, didactic—where attention is well concentrated on the disease, its cause, and the pathological phenomena and therapy associated with it, without much reference to the environment or any to the patient. It is a book that is more likely to find favour with the student revising his work and entrenching himself against the examiners than with the man who seeks wisdom and inspiration in the treatment of the sick. A very obvious good feature is its method, the diseases being classed, as far as is possible, according to their natural sources and relations, as protozoal, spirochaetous, bacterial, helminthic, nutritional deficiency, climatic, etc., etc. Another feature of the book is its freedom from superfluities of medical zoology. The author evidently understands that long interludes of taxonomic zoology are a snare and obstruction in a treatise on disease; but, on the other hand, he does not here—except in his classification—show sufficient appreciation of the fact that the whole concept of "exotic" disease is essentially and distinctively permeated by zoology, and therefore not a little of his medical zoology is infirm and perfunctory. The book is plentifully illustrated, and most of the illustrations are good, though a few—*e.g.*, the figures of *Glossina palpalis*, *Chrysops dimidiata*, and *Entamoeba histolytica*, and the coloured plate of malaria parasites—are poor, and one—namely, the comparison of the eggs of *Ancylostoma duodenale* and *Necator americanus*—is misleading.

A. Alcock.

Fox (Herbert). Pathologist to the Zoological Society of Philadelphia. Director of the William Pepper Clinical Laboratory, University of Pennsylvania.' **Disease in Captive Wild Mammals and Birds. Incidence, Description, Comparison.** With a Foreword by Penrose (Charles B.).—pp. vii+665. With 87 plates and 31 charts. 1923. Philadelphia, London & Chicago; J. B. Lippincott Co. [Price 60*s*.]

This handsomely furnished volume is mainly an outcome of a remarkable record of comprehensive post-mortem studies of 5,365 captive wild animals (1,860 mammals and 3,505 birds) that died in the ordinary course of events in the Philadelphia Zoological Gardens during 20 years. Its special utilities are obvious; but here we can only draw attention to its value to the pathologist, nosographer, and experimental biologist as an admirably arranged storehouse of variously suggestive facts.

Nearly half of the text is descriptive of observed pathological changes and lesions directly and indirectly associated with them, the observations being arranged primarily according to the organic system and site affected and subordinately according to incidence in the zoological system. In the multitude of facts recorded the comparative pathologist will find much that is interesting and curious, if nothing very surprising, and the experimental pathologist many suggestions.

Of a wide interest is the brilliant essay on the relation of diet to disease, contributed by Dr. E. P. Corson-White. Here, from a text provided by an analysis of the post-mortem records, a most perspicuous argument is developed, in the comprehensive scope of which the principle that the appraisement of a diet must take into account the by-products of digestion and metabolism and the influence upon the intestinal flora [the fauna, particularly the varied fauna of ruminants, having not yet obtained general recognition] is not ignored. Confining attention merely to some significant facts, it is to be noted (1) that carnivorous birds and mammals showed a large variety of diseases of the alimentary tract and its accessory glands and of the kidneys, and that thyroid disorders were almost entirely confined to the Carnivora and rickets to the young of that Order; (2) that a succulent vegetable diet (a diet very favourable to bacteria) gave in mammals the lowest percentage of degenerative visceral changes and the highest of acute gastritis with lesions mostly adjacent to the pyloric opening; (3) that a dry vegetable diet (grain and hay, the latter very favourable to streptococcus, staphylococcus, and *Bacillus refringens*) provided in mammals the greatest number of cases of malnutrition, food-poisoning, pancreatitis, acute degenerations of liver, heart and arteries, and almost all the cases of arthritis; (4) that a mixed diet of flesh and plant food showed a low percentage of diseases of the alimentary tract and its accessory glands and of the kidneys, but in mammals, a very high percentage of anaemias and osteomalacia; and (5) that evidence of gout, commonly noticed in birds, was not observed in any mammal.

Of true tumours, 93 were discovered in 92 animals (48 mammals and 44 birds) in the course of the 5,365 autopsies. Their incidence embraced all the mammalian Orders—except the three (bats, Insectivora, and Monotremata) that are sparely or never represented in zoological gardens—being heaviest on rodents, marsupials, and Carnivora (in that succession) and lightest on monkeys. Among the 9 Orders of birds affected over 50 per cent. of the incidence fell on the Psittaci, parrots being prone to renal and adrenal tumours. The 93 tumours observed include fibroma, osteoma, chondroma, lipoma, myoma, glioma, angioma, endothelioma, sarcoma (16 cases), papilloma, epithelioma, adenoma (19 cases), carcinoma (25 cases) and hypernephroma; in microscopic as in gross appearance these tumours were essentially the same as in man.

Tuberculosis was observed in 492 (9·1 per cent.) of the 5,365 autopsies, though it was not always the actual cause of death. The mammalian share of infection was 14·7, the avian 6·2 per cent. The mammalian

incidence was distributed among Primates (38·5 per cent.), Lemurs (26·7), Carnivora (3·5), Rodents (2·5) and Ungulata (9·6). Also 2 of 3 elephants that came under observation were infected. Infection *via* the air-passages was judged to predominate in mammals (excepting Primates) and also in three Orders of birds (Passerines, Owls and Ostriches); infection *via* the alimentary canal in birds (except the three Orders named) and in Primates. The tubercle bacillus, from whatever particular site, appeared to be generally infective—*e.g.*, human bacilli were found in numerous Orders of birds and mammals. Incidental to the subject of tuberculosis some interesting facts are given respecting the normal temperature of various species of monkeys and apes.

With regard to mycosis, "judging by our experience it would seem probable that the Aspergillus can, under conditions not fully explained, cause inflammation of the avian air-sac and tubercles in the viscera." The action of the fungus cannot be entirely mechanical, since besides a mere suffocative invasion an infiltrating mycotic pneumonia may occur, and also a chronic nodular necrotic impregnation of lungs, air-sacs, liver, spleen, and gut.

A chapter on streptotrichoses contains, among other things, a very full account of the fatal malady known as Kangaroo disease, peculiar to that marsupial family. The disease is due to a Streptothrix (or Nocardia); it is not communicable in the ordinary sense and may occur sporadically in kangaroos not recently imported or brought in touch with recent imports. It first becomes manifest, like actinomycosis, in swellings and ulcerations of the buccal region, where the streptothrix is believed to find its way through some casual abrasion of the mucosa (*e.g.*, as by sharp points of grass), but the point of general interest is the author's suggestion that the further progress of the streptothrix to ulcerative and septicaemic issues is aided by a certain minute, gram-negative, non-motile bacillus which he has frequently found in the lesions and exudates.

Among the miscellaneous infections encountered may be mentioned diphtheria in cassowaries, and an extensive development of molluscum contagiosum, with characteristic "molluscum bodies" but without the lobules of epithelium penetrating into the corium, on the head of a wild Turkey.

In the final chapter, by Dr. F. D. Weidman, on the Animal Parasites encountered—chiefly parasitic worms—the utilitarian and economic value of this branch of zoology is emphasized. Among matters of medical interest it is mentioned that hookworms have been found in wolf and several species of foxes, wild cats and other Felidae, and in giraffes, Malayan tapir, and Californian hair seal, but that none of them is either of the species that infests man; also that 6 fatal cases of amoebic dysentery occurred in American monkeys, the amoeba found in the faeces and in sections of the gut *not* being *Entamoeba histolytica*.

We can but mention—being outside our purview—the humanizing "Foreword" and the philosophical Introduction of this opulent book.

A. Alcock.

Jaureguiberry. **Les blancs en pays chauds. Déchéance physique et morale.**—60 pp. 1924. Paris: A. Maloine et Fils, Éditeurs. 27, Rue de l'École-de-Médecine.

An average European who spends the best years of his life amid the docile and pusillanimous population of a remote tropical settlement, dreadfully attended by a host of obsequious servants, taking no exercise, and using no muscles but those perpetually engaged in mastication and imbibition, is pretty certain—if he escape the prevalent diseases of the country—to become lazy, vain, pompous, and excessively corpulent; we all know Jos. Sedley, the famous Collector of Bogglywallah, and the picture of him eating the air on his appropriate elephant.

To the author of this startling book—who does not appear to be acquainted with Mr. Jos. and, indeed, expressly excludes the British tropical dominions from his purview—it is the fate of Frenchmen expatriated in the tropics to suffer there a change into something compared with which Mr. Jos. Sedley would appear a Bayard.

This change, which the deluded victims of it imagine to be "acclimatization," is brought about by complete abstinence from physical exercise, devotion to a sedentary or a semi-recumbent posture, over-indulgence in refreshments, much solitude, and the subtle-inexorable influences of an inferior civilization. These things are the direct effects of a tropical climate, which European sanitation and the cult of athletic sports may mitigate temporarily for the individual, but not permanently for the race.

The author describes with considerable acerbity the results of this acclimatization, physical and mental. The pampered belly becomes swollen like an egg ("œuf colonial") and pendulous. The disused legs become atrophied, and so disproportioned to the enormous belly that the human profile is transformed to the likeness of a frog ("type batracien"). If we could look into this batrachian abdomen we should find bloated viscera lying beneath loads of fat. No wonder that the poor victim has an earthy potato face ("masque colonial") and is decrepit and bald before his time. If we follow further the results of acclimatization we find the man to be sententious, pompous, and volubly omniscient; foolish and vain and irritable as a child; forgetful of everything but trivialities and the divinity that hedges himself; boastful of his exploits and escapades, but pusillanimous as a hare. Worst of all, he has almost lost his soul, for his conscience has sunk to the level of the unregenerate heathen around him. He may even be sexually depraved. Such is the picture the writer gives us of his exiled compatriots in the tropics; and surely not Mrs. Candour nor Lady Sneerwell, nor even Sir Benjamin Backbite himself ever portrayed their bosom friends in more extravagant outline or darker colouring.

The author's fierce passages, though some of them strike you like blasts from the pit, are not altogether what Carlyle describes as "splenetic atrabiliar reflections" of a misanthrope; it would be more charitable to liken them to the patriotic declamatory warnings of the minor prophets. He sees the nations of Europe intent on colonial expansion and on visions of tropical countries made amenable in a millennium ruled by Hygeia. These visions he denounces with greater extravagance as delusions. So far as France is concerned, "may the colonies and their products go to the devil if colonial intercourse is to contaminate the blood that has inscribed 'Verdun' on the scroll of glory." Of course, there must be commerce with tropical countries, and in this enterprise only men between 25 and 40, or perhaps 50, years should engage. He appears to approve the British method of recruiting good men for colonial service, and giving them frequent opportunities of recuperation in Europe. He undoubtedly approves the British mode of vigorously resisting the enervating influences of the tropics by games and all forms of outdoor exercise—this, at any rate, will put an end to the "œuf colonial," the "type batracien," and the "masque colonial," and will mitigate the ennui that imperils the soul.

A. Alcock.

OXFORD (Eduardo). **Geografía médica del Yuruary. Trabajo presentado al tercer Congreso Médico Venezolano, celebrado en Valencia, capital del Estado Carabobo, en el mes de junio de 1921.** – 134 pp. With 1 map & 15 figs. 1924. Caracas: Litografia del Comercio.

Yuruary is a territory to the east of Bolivar, situated between it and British Guiana. The work under review is of the nature of a combined guide-book and catalogue. It is divided into two parts, geographical and medical. The first part deals with physical characters, geology,

climatology, flora, fauna, and ethnology. The Flora is a rich one; over 170 medicinal plants are mentioned (with brief notes as to their uses) and among them are several which are recommended for dysentery and other intestinal conditions, and might be worth the attention of pharmacologists. The Fauna includes 8 varieties of poisonous snakes, 4 poisonous spiders, scorpions, and centipedes.

The second part deals with the medical aspect. Malaria is most widespread, though certain districts are free, notably El Palmar in Piar and part of Guasipati in Roscio. During July, August, September and part of October it becomes almost epidemic in character. Enteric fever, smallpox, diphtheria, scarlet fever, yellow fever and dysentery, both bacillary and amoebic, are met with. As regards parasitic diseases, hookworm is fairly common; filariasis and schistosomiasis have been recorded. No statistics of prevalence of any morbid conditions are given. There is, finally, a febrile affection of unknown nature which occurs at all seasons and goes by the name of "prolonged fever," though the attack lasts only 5 days as a rule, in some cases 9–11 days. No work of investigation into this appears as yet to have been attempted.

H. Harold Scott.

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The bracketed abbreviations after the page numbers indicate the subject. Page numbers within brackets indicate papers not summarized.

Am. signifies Amoebiasis and Amoebic Dysentery.
Bb. ,, Beriberi.
Bl. ,, Blackwater.
B.R. ,, Book Review.
Chl. ,, Cholera.
Der. ,, Tropical Dermatology.
Diet. ,, Native Dietaries.
Dys. ,, Dysentery (Bacillary and Unclassed).
Ent. ,, Enteric Fevers.
Fev. ,, Fevers.
Hel. ,, Helminthiasis.
H.S. ,, Heat Stroke.
Jaun. ,, Infectious Jaundice.
K.A. ,, Kala Azar.
Lab. ,, Laboratory Methods.
Lep. ,, Leprosy.
Mal. signifies Malaria.
Misc. ,, Miscellaneous.
Oph. ,, Tropical Ophthalmology.
Pel. ,, Pellagra.
Pl. ,, Plague.
Rab. ,, Rabies.
R.F. ,, Relapsing Fever and Other Spirochaetoses.
Sc. ,, Scurvy.
Sp. ,, Sprue.
S.S. ,, Sleeping Sickness.
Syph. ,, Syphilis in Natives of Warm Countries.
Tb. ,, Tuberculosis.
Und. ,, Undulant Fever.
Ys. ,, Yaws.
Y.F. ,, Yellow Fever.
Z. ,, Medical Zoology.

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——, & Tsuyuki, H., 936 (Hel.)
Ando, N., 172 (Lep.)
Ando, R., 538 *bis*, 539 (Hel.)
Andrewes, F. W., & others, 585 (B.R.)
d'Anfreville de la Salle, L., 841 (Misc.), 987 (Tb.)
v. Angerer, K., 738 (R. F.)
Anglade, 355 (Dys.)
Anigstein, L., & Milinska, Z., 397 (Misc.)
Annales de Médecine et de Pharmacie Coloniales, 838 (Misc.)
Antonibon, A., 431 (Z.)
Antonovsky, A., 355 (Dys.)
Aoki, T., Kawamura, M., Kamikawa, Y., & Fukamachi, T., 870 (Lep.)
Aragão, H. de B., 140 (Z.)
Arantes, A., 201 (Hel.)
Araujo, H. C. de S., 584 (B.R.), 861, 864 *bis*, (Lep.)
Arbeit, with Laignel-Lavastine, Boutet & Serrant, 742 (Fev.)
Archibald, R. G., 16, 17, 628 (Der.)
——, & Susu, B., 775 (Z.)
Architouv, with Delamare & Djémil, 918 (Misc.)
Archives de l'Institut Pasteur de Tunis, (714) (Rab.)
Archives des Instituts Pasteur de l'Afrique du Nord, (18) (Der.) 83 (Misc.),
Archives of Medical Hydrology, 901 (Misc.)
Archivos Brasileiros de Medicina, 750 (S.S.)
Archivos Instituto Nacional Higiene de Alfonso XIII, 250 (K.A.)
Argaud, R., with Cange, 12 (Der.)
——, & Nénon, J., 13 (Der.)
Aristowsky, W., & Höltzer, R., 269 (R.F.)
Arkwright, J. A., 917 (Misc.)
——, with Greenwood, 673 (Misc.)
Arloing, F., & Thévenot, L., 712 (Rab.)
Armstrong, C., 109 (Fev.)
Armstrong, J. S., 301 (Mal.)
Arnaud, L., 468 (Misc.), 627 (Der.)
Aronson, J. D., with Lewis, 185 (Lep.)
Asada, J., 553, 568 *bis*, 569 *bis*, 960, *bis*, (Hel.)
Asada, J., & Kohgame, Y., 569 (Hel.)
Ascanio Rodrigues, J. B., 566 (Hel.)
Ash, J. E., with Haughwout & Leach, 972 (Hel.)
Ashworth, J. H., & Turner, A. L., (159) (Z.)
d'Astros, Giraud, P., & Raybaud, J., 253 (K.A.)
Atkey, O. F. H., 309 (Misc.)
Atkins, W. R. G., 494 (Misc.)
Augustine, D. L., 220, 221, 222 (Hel.)
d'Aunoy, R., 444 (Pl.), 713 (Rab.)
Auricchio, L., 656 (Und.)
Autric, 302 (Mal.)
Avidon, H., 606 (Mal.)
d'Avigny, G. P., 733 (R.F.)
Awoki, T., with Tsurumi, Hara, Imai, & Sakamoto, 68 (Pl.)
Ayyar, A., with Russell & Ubhaya, 729 (R.F.)

B

Babés, V., & Jonesco, D., 712 (Rab.)
Bablet, J., with Bernard & Pons, 931 (Hel.)
Babonneix, L., & Rivalier, E., (189) (Lep.)
Bach, F. W., & Kiefer, K. H., (159) (Z.)
Baermann, G., 260 (R.F.), 369 (Ys.)
Bagchi, H. N., 707 (Sp.), 971 (Hel.)
Bagshawe, A. G., with Balfour, van Campenhout, & Martin, 498 (B.R.)
Baily, J. D., with Sinton, 601 (Mal.)
Bais, W. J., 582 (Hel.)
Bakker, C. R., 959 (Hel.)
Balfour, A., 156 (Z.), 319 *bis*,, 904, 912 (Misc.)
——, & Scott, H. H., 504 (B.R.)
——, van Campenhout, E., Martin, G., & Bagshawe, A. G., 498 (B.R.)
Ball, E., (66) (Bl.)
Ballerstedt, 609 (Mal.)
Balteanu, I., with Ciuca, 448 (Chl.)
Bamforth, J., 347 (Dys.)
Banerjee, D. N., 450 (Chl.), 715, 716, 721, 724(K.A.), 926 (Misc.)
Baqué, B., & Kieffer, J. J., (159) (Z.)
Bär, H. G., 954 (Hel.)
Barber, M. A., 776 (Z.)
——, & Hayne, T. B., 429, 430 (Z.)
——, Komp, W. H. W., & Hayne, T. B., 430 (Z.)
Barberi, S., 724 (K.A.)
Bardachzi, F., (618) (Mal.)
Barkan, H., 980 (Oph.)
Barlow, C. H., 196 (Hel.)
Barlow, D. L., 116 (Lab.)

Barnard, J. E., with Western, 123 (Lab.)
Barrada, H., 461 (Oph.)
Barraud, P. J., (159) (Z.)
Barrera, F. de P., & Chavarria, A. P., 864 (Lep.)
Barretto, C., with De Freitas, 288 (Mal.)
Barrow, J. V., 772 (Z.)
Barrowcliff, M., 528 (Diet.)
Bartels, H. A., with Gilbert, 809 (Lab.)
Barthelemi, V., 925 (Misc.)
Bartholomew, R. A., 800 (Syph.)
Basa, J. A., with Wade, 175 (Lep.)
Bassett-Smith, P., 251 (K.A.), 356 (Dys.), (384) (S.S.), 543 (Hel.), 637 (Bb.), 644 (Und.), 659 (Fev.), 765 (Sc.), 869 (Lep.)
——, & Gloyne, S. R., 996 (Tb.)
Bastedo, W. A., & Famulener, L. W., 360 (Sp.)
Basu, J. B., with Maitra, 887 (Chl.)
Basu, S. C., 715 (K.A.)
Bates, L. B., & St. John, J. H., 496 (Misc.)
Bathellier, J., 788 (Z.)
Baujean, R., 329 (Misc.)
Baury, with Bédier & Laurency, 600 (Mal.)
——, with Leger, 68, 878 (Pl.)
Bayma, T., 146 (Z.)
Beccle, H. C., with Worster-Drought, 296 (Mal.)
Becker, E. R., 423 (Z.)
——, with Taliaferro, (793) (Z.)
Bédier, E., with Boulay, 601 (Mal.)
——, with Heckenroth, 926 (Misc.)
——, Laurency & Baury, 600 (Mal.)
Beger, H., 276 (Jaun.)
Béguet, M., 645 (Und.)
Bel, P., with Remlinger, 712 (Rab.)
Belk, W. P., with Randall & Small, 10 (Der.)
Bell, F. E., 94 (Misc.)
Bell, G. H., 458 (Oph.)
Bell, W. J. E., (975) (Hel.)
Bender, L., 776 (Z.)
Benech, J., with Etienne, 301 (Mal.)
Ben-Hamel, S., 138 (Z.)
Benigo Velasco, C., (370) (Ys.)
Bensaude, Cain & Rachet, 686 (Am.)
Béraud, M., with Montpellier, 15 (Der.)
Bercovitz, N., 30 (Am.), 226, 973 (Hel.), 616 (Mal.)
Bernard, P. N., 121 (Lab.)
——, Bablet, J., & Pons, R., 931 (Hel.)
——, & Guillerm, J., 635, 636 (Bb.)
——, Pons, R., 441 (Pl.)
Bernucci F., (189) (Lep.)
Bertoye, with Weill, 454 (H.S.)
Besredka, A., 76 (Ent.), 478 (Misc.)
——, A., & Golovanoff, M., 447 (Chl.)
Bessesen, D. H., 101 (Sc.)
Bettencourt, A., 942 (Hel.)
Betts, A. J. V., 842 (Misc.)
Beukers, C. M., 873 (Lep.)
Beurnier & Clapier, P., 367 (Ys.)
——, with Danet, 797 (Ys.)
Bevan, L. E. W., 653, 654 (Und.)
Bezzi, G., & Moratti, N., 273 (Fev.)
Bhattacharjee, S. P., with Megaw, 638 (Bb.)
Bidault, R., 977 (Oph.)
Biehler, R., (189) (Lep.)
Bieling, 180 (Lep.)
Bigland, A. D., 523 (Pel.)
Bihlmeyer, G., (238) (Hel.)
Bishopp, F. C., 789, 790 (Z.)
Bitterman, T., with Callender, 966 (Hel.)
Blacklock, B., 62 (Bl.), 155, 784, (793) (Z.)
——, & Adler, S., 609 (Mal.)
——, & Thompson, M. G., 150 (Z.), 940, 941 (Hel.)
Blacklock, D., 439 (Z.)
Blair, M. C., 324 (Misc.)
Blanc, G., & Caillon, L., 921 (Misc.)
Blanchard, M., & Laigret, J., 752, 756 (S.S.), 924 (Misc.), 934, 955 (Hel.)
——, & Lefrou, G., 385 (Bl.), 755 (S.S.)
Blanco, J., with Ojero, Redondo, Delgado, Cid & Palanca, 594 (Mal.)
De Blasi, D., 646 (Und.)
Blasquez Bores, F., 594 (Mal.)
Blegvad, O., 976 (Oph.)
Bleyer, J. C., 60 (S.S.)
Boeck, W. C., & Stiles, C. W., 422. (Z.)
van Boeckel, L., & Geens, J., 314 (Misc.)
Boecker, E., 92 *bis*, 413 (Misc.)
de Boer, H. S., 911 (Misc.)
Bogrow, S. L., (159) (Z.)
Boidin, L., & de Gennes, 446 (Pl.)
Boinet, 95 (Bb.)
——, & Mège, 96 (Bb.)
Boku, S., 691 (Dys.)
Bollack, J., 983 (Oph.)
——, & Lagrange, H., 460 (Oph.)
Bolton, J. S., & McGrath, M. J., 35 (Dys.)
Bombay, Bacteriological Laboratory, 69 (Pl.), 304 (Misc.)
Bonne, C., 108 (Fev.), 430 (Z.), 724 (K.A.)
Bonnet, M., 205 (Hel.)
Boon van Ostade, C. M., 40 (Dys.)
Borel, P., & Maire, G. L. E., 595 (Mal.)
Bornhagen, H., 350 (Dys.)
Borrel, 311 (Misc.)

Boschenko, W., with Ioff, 596 (Mal.)
Bose, I., 258 (K.A.)
Bose, J. P., 398 (Misc.)
——, & Mukerji, A. K., 488 (Misc.)
Bose, S. R., 97, 635 (Bb.)
Boucher, H., with Fontoynont, 2 (Der.)
Bouffard, 593 (Mal.), 625 (Der.)
——, & Girard, 69 (Pl.)
Bouguet, A., with Sergent, Et., Gueidon & Catanei, 728 (K.A.)
Boulay, A., & Bédier, E., 601 (Mal.)
——, & Leger, M., 543 (Hel.)
——, with Nogue, 204 (Hel.)
Bourdinière, 35 (Dys.)
Bourgin, Decrop & Salle, 507 (Lep.)
Boutet, with Laignel-Lavastine, Serrant & Arbeit, 742 (Fev.)
Bowden, D. T., with Huck, 608 (Mal.)
Boyd, M. F., 294, 600 (Mal.)
Braafladt, L. H., 395 (Misc.)
Brachio, J. J. A., 407 (Misc.)
Bradley, B., (663) (Fev.)
Bradley, G. H., 780 (Z.)
Brahmachari, B. B., 471 (Misc.)
Brahmachari, U. N., 253, 254, 718 (K.A.), 605 (Mal.)
——, Chaudhury, S. C., Das, J., & Sen, P. B., 718 (K.A.)
——, Das, J., & Sen, P. B., 253 (K.A.)
Bramwell, B., 360 (Sp.)
Branch, E. W. R., & McDonald, W. M., 329 (Misc.)
Brandão, A., 302 (Mal.)
Brandt, W., 359 (Dys.)
Bras de Sá. L. J., (618) (Mal.)
Bréger, with Pissavy & Chabrun, 23 (Am.)
Brem, W. V., 289 (Mal.)
Brèthes, J., (159) (Z.)
British Drug Houses Ltd., 487 (Misc.)
British Empire Leprosy Relief Association, 187 (Lep.)
British Guiana, 392 (Misc.), 508 (Lep.), 993 (Tb.)
British Medical Journal, 613 (Mal.)
British Museum (Natural History), 764 (B.R.)
Broc, R., with Brun, Burnet, Anderson & Solovief, 7 (Der.)
Brokman, H., 37, 352, 690 (Dys.)
Brooks, M. M., 414 (Misc.)
Brouard, M., 626 (Der.)
Broughton-Alcock, W., 40 (Dys.), 567 (Hel.)
Brown, A., with Gallie, 573 (Hel.)
Brown, C., with Young & Smyly, 720 (K.A.)
Brown, H. C., with Henry, 701 (Dys.)
Brown, W. H., & Pearce, L., 378 (S.S.)
Brug, S. L., 135 (Z.)
——, & Haga, J., 155, (160) (Z.)
Brumpt, E., 194, 530 (Hel.), 748 (S.S.)
——, & Joyeux, C., 388 (Misc.)
Brun, R. G., Broc, R., Burnet, E., Anderson, C., & Solovief, P., 7 (Der.)
——, & Delamare, 402 (Misc.)
Brüning, H., 193, 962 (Hel.)
Brusset & Burollet, P. A., 201 (Hel.)
Brussin, A. M., with Kritschewsky, 758 (S.S.)
Brychonenko, S., with Steppuhn & Zeiss, 394 (Misc.)
Bua-Fazio, F., with Fornaca, 647 (Und.)
Buchanan, G., with Gulland, 742 (Jaun.)
de Buen, S., 484 (Misc.), 605 (Mal.)
——, & Luengo, E., 58 (S.S.)
——, Rodriguez, R., & Casa, U., 732 (R.F.)
Buisson, J., 140 (Z.)
Bull, C. G., & King, W. V., 143 (Z.)
——, with ——, 143, (160) (Z.)
——, & Reynolds, B. D., 429 (Z.)
——, & Root, F. M., 143 (Z.)
Bulletin de l'Académie de Médicine, 373 (S.S.)
Bulletin of the Montana State Board of Health, 110 (Fev.)
Bulletin de l'Office Internat. d'Hyg. Publique, 908 (Misc.)
Bulletin de la Société de Pathologie Exotique, 763 (S.S.)
Bulletin des Volkskommissariats f. Gesundheitswesen, 596 (Mal.)
Burgess, E., 892 (Ent.)
Burnet, E., 103, 104, 105, 647, 657 (Und.)
——, & Anderson, C., 651 (Und.)
——, with Brun, Broc, Anderson & Solovief, 7 (Der.)
Burollet, P. A., with Brusset, 201 (Hel.)
Buschke, A., & Kroó, H., 268 (R.F.)
——, & Langer, E., 524 (Pel.)
Businco, A., & Foltz, P., 612 (Mal.)
Busson, B., & Ogata, N., 693 (Dys.)
Butka, H. E., 552 (Hel.)
Butler, C. S., 462 (Misc.)
Butler, G. G., 830 (Lab.)
Buxton, P. A., 145 (Z.), 256 (K.A.), 432, (793) (Z.)

C

Cachin, 445 (Pl.)
Cadbury, W. W., 417 (Misc.), 582 (Hel.)
Cadena, M. A., (975) (Hel.)

Caillon, L., with Blanc, 921 (Misc.)
Cain, with Bensaude & Rachet, 686 (Am.)
Caius, J. F., & Iyengar, K. R. K., 158 (Z.)
——, & Mhaskar, K. S., 218, 230 (Hel.)
Calbairac, 476 (Misc.)
Calcagno, B. N., with Ithurrat, 208 (Hel.)
Calcutta, Pathological Laboratory, 304 (Misc.)
Calcutta School of Tropical Medicine, 666 (Misc.)
Caldwell, F. C., 235 (Hel.)
Callanan, J. C., 912 (Misc.)
Callender, G. R., & Bitterman, T., 966 (Hel.)
Calmette, A., 315, 672 (Misc.)
Cambessédès, 846 (Misc.)
——, with Tanon, 845 (Misc.)
Cameron, G., 555 (Hel.)
Cameron, R. D., 108 (Fev.)
Cameron, T. W. M., 901 (Misc.)
van Campenhout, E., with Balfour, Martin & Bagshawe, 498 (B.R.)
Campos, E. de S., 702 (Dys.)
Cange, A., & Argaud, R., 12 (Der.)
Cannata, S., 340 (Am.)
Cannon, H. C., with Osborne & Mendel, 79 (Diet.)
Cantieri, C., 102 (Und.)
Cantlie, James, 163 (B.R.)
Cantlie, N., & Moubarak, E. S. Y. E., 603 (Mal.)
de Capite, A., 717 (K.A.)
Cappe de Baillon, P., 439 (Z.)
Caputo, V., 508 (Lep.)
Cardoso, E., 199 (Hel.)
Caridroit, F., 643 (Sc.)
Carini, A., 622 (Der.)
Carles, J., 344 (Am.)
Carpenter, G. D. H., 53 (S.S.)
Carrasco, (975) (Hel.)
Carrieu, M. F., with Poucel, 567 (Hel.)
Carrión, A. L., (18) (Der.)
Casa, U., with De Buen & Rodriguez, 732 (R.F.)
Cassimatis, C., 461 (Oph.)
Castellani, A., 5 (Der.), 497, 918 (Misc.)
——, & Tejera, H., 6 (Der.)
——, & Wilkinson, A. G., 3 (Der.)
Castex, M. R., & Greenway, D., 425 (Z.)
Castorina, G., 256, 257 *bis* (K.A.), 650, 651 (Und.)
Catanei, A., 608 (Mal.)
——, with Sergent, Et., & Sergent, Edm., 139 (Z.), 289, 290 (Mal.)
——, with Sergent, Et., Gueidon & Bouguet, 728 (K.A.)
Cavassa, N. E., (160) (Z.)
Cawston, F. G., 196, 199, 203, 536, 544, 546, 547, 943, (Hel.), 437 (Z.)
Cerqueira, D., 775 (Z.)
Cerruti, G., 713 (Rab.)
Cesari, E., with Martel, Renault & Lévy, 645 (Und.)
Ceylon, 827 (Lab.), (714) (Rab.)
Chabrun, with Pissavy & Bréger, 23 (Am.)
Chagas, C., (384), 751 (S.S.)
Chakraverti, A., 712 (Rab.)
Chalam, B. S., with Young, T. C. M., 285 (Mal.)
Chalon, G., (793) (Z.)
Chambers, J. H., 300 (Mal.)
Chand, W., 846 (Misc.)
Chandler, A. C., 157 (Z.)
Chandra, S. N., with Lloyd, 812 (Lab.)
Chaput, P., 739 (R.F.)
Charles, H., 453 (Ent.)
Charlton, A., with McJunkin, 115 (Lab.)
Charrier, H., 198 (Hel.), 438, (793) (Z.)
Chassigneux, A., 713 (Rab.)
Chatterjee, G. C., 137 (Z.), 247 (K.A).
Chaudhury, S. C., with Brahmachari, Das & Sen, 718 (K.A.)
Chauvet, S., 469 (Misc.)
Chavarria, A. P., with Barrera, 864 (Lep.)
Cheinisse, L., 534 (Hel.)
Ch'en Pang, 937 (Hel.)
Cherefeddin, O., 884 (Pl.)
Ch'i Chang Ch'un, with Struthers, 717 (K.A.)
China Medical Journal, 171, 180 (Lep.)
Chitre, G. D., with Taylor, 440 (Pl.)
Chopra, R. N., with Acton, 902 (Misc.)
——, with Ghosh, B. N., & De, P., 916 (Misc.)
——, Knowles, R., & Gupta, J. C., 604 (Mal.)
——, with ——, ——, & Das Gupta, 366 (Ys.)
——, & McVail, J. B., 410 (Misc.)
Chow, J. E., with Rose, 483 (Misc.)
Christie, E. M., 291 (Mal.)
Christophers, S. R., (160) (Z.), 284, 597 (Mal.), 669 (Misc.)
——, & Khazan Chand, 597 (Mal.)
Christopherson, J. B., 198, 542, 546 *bis*, 942 *bis*, 943, 945 (Hel.)
Chuma, M., with Kujo, 185 (Lep.)
Ciaccia, S., 273 (Fev.)
Cid, R. F., with Ojero, Redondo, Blanco, Delgado & Palanca, 594 (Mal.)
Cilento, R. W., 34 (Am.), 577, 953 (Hel.)
——, & O'Neill, V. F., 954 (Hel.)
——, & Richards, R. E., 952 (Hel.)
Ciotola, A., 344 (Am.)

Ciuca, M., & Balteanu, I., 448 (Chl.)
Ciurea, J., 541 (Hel.)
Clapier, P., 14 (Der.), 198 (Hel.)
— —, with Beurnier, 367 (Ys.)
— — & Georgelin, 629 (Der.)
Clark, F., (160) (Z.)
Clark, A. J., with Coward, 80 (Diet.)
Clark, H. C., 477 (Misc.)
Clarke, J. T., 474 (Misc.)
Clearkin, P. A., 811 (Lab.), 911 (Misc.)
Clemow, F. G., 879 (Pl.)
Cleveland, L. R., 159, 790 (Z.)
Cluver, E. H., 394 (Misc.)
Cnopius, N., 11 (Der.)
Cobb, N. A., 235 (Hel.)
Coleman, R. B., with Lasbrey, 944 (Hel.)
Collado, E. G., with Roxas, 527 (Diet.)
Collazo, J. A., 81 (Diet.)
Collier, W. A., with Kudicke & Feldt, 731 (R.F.)
Collin, L., 87 (Misc.)
Collins, C. C., 131 (Lab.)
Colombani, 876 (Pl.)
Colombe, J., & Foulkes, D., 436 (Z.)
Comby, J., 318 (Misc.)
Concepción, I., 486 (Misc.)
Connal, A., 65 (Bl.), 804 (Bl.), 831 (Lab.)
Connor, F. P., 487 (Misc.)
Connor, M. E., & Monroe, W. M., 141 (Z.)
Connor, R. C., 496 (Misc.)
Conseil, E., with Nicolle, 267 (R.F.)
Coogle, C. P., with Maxcy, 293 (Mal.)
Cook, A. S., & Tasker, D. G. C., 572 (Hel.)
Cooley, R. A., 157 (Z.)
Cooling, L. E., (160) (Z.)
Cooper, A. T., 234 (Hel.)
Cordes, W., 604 (Mal.)
Cornelius, S., 363 (Sp.)
Corner, W., 285 (Mal.)
Cornwall, J. W., 77 (Ent.), (160) (Z.), 257 (K.A.), 818 (Lab.)
——, & La Frenais, H. M., 452 (Ent.)
Corpus, T., 625 (Der.)
Corson, J. F., 17 (Der.), 214 (Hel.)
Cort, W. W., 930, 967 (Hel.)
——, with Payne & Riley, 220, 224 (Hel.)
——, Riley, W. A., Payne, G. C., & Hill, R. B., 223 (Hel.)
——, with Augustine, Payne, G. C., Riley, Stoll, Hill, & Payne, F. K., 220 (Hel.)
Cory, G., 900 (Misc.)
da Costa, A. F. W., 417 (Misc.)
da Costa, E. B., 309 (Misc.)
da Costa, N., 445 (Pl.)
Cotoni, L., Truche, C., & Raphael, A., 928 (B.R.)
Cottin & Saloz, (238) (Hel.)
Couput, A., with Leger, 787 (Z.)
Courmont & Rochaix, A., 693 (Dys.)
Cousin, G., 983 (Oph.)
Cousland, P. B., 44 (Sp.)
Covell, G., 321 (Misc.)
Coward, K. H., & Clark, A. J., 80 (Diet.)
Cragg, F. W., 154 (Z.)
Craik, R., 17 (Der.)
Cram, E. B., 958 (Hel.)
Crambes, with Decrop, 626 (Der.)
Cramer, W., 80 (Diet.)
Crowell, B. C., 54 (S.S.)
Cruickshank, J. A., 890 (Ent.)
——, with Cunningham, 334 (Misc.)
——, ——, & Iyer, T. S., 211 (Hel.)
Cruickshank, M. M., 457 (Oph.)
Cruz, A. O., with Perkins, 515 (Lep.)
Cuenca, H., with Jiménez, (18) (Der.)
Cullen, J. P., 946 (Hel.)
Cummings, E. H. T., with Adler, 326 (Misc.)
Cummins, S. L., 241 (Tb.)
da Cunha, A. M., & Pacheco, G., 135, (160) (Z.)
Cunningham, J., 38 (Dys.), 825 (Lab.)
——, & Cruickshank, J. A., 334 (Misc.)
——, with ——, & Iyer, 211 (Hel.)
——, & Timothy, B., 815 (Lab.)
Curry, D. P., 289 (Mal.)
Curson, H. H., 784 (Z.)

D

Dale, H. H., 916 (Misc.)
Danet & Beurnier, 797 (Ys.)
Dang Van Cúóng, with Montel & Trân Van An, 470 (Misc.)
Dargein & Lancelin, 609 (Mal.)
Darier, A., 978, 980 (Oph.)
Darling, S. T., 236, 969 (Hel.)
Das, J. L., 528 (Diet.), 661 (Fev.)
Das, J., with Brahmachari & Sen, 253 (K.A.)
——, with ——, Chaudhury & Sen, 718 (K.A.)
Das, S. M., 295 (Mal.)
Das Gupta, B. M., with Knowles, 427 (Z.)
——, with ——, Chopra & Gupta, 366 (Ys.)
——, with Mackie & Swaminath, 246 (K.A.)
——, with Napier, 252 (K.A.)
Das Gupta, S. A. S. B. M., with Knowles, 281 (Fev.)
Dattner, B., & Kauders, O., 614 (Mal.)
Dauptain, with Laroche, 277 (Jaun.)
Davey, J. B., 748 (S.S.), 795 (Ys.)
David, J., 979 (Oph.)
——, & Ségal, J., 597 (Mal.)

Davidson, J., 327 (Misc.)
Davies, L. W., 467 (Misc.), 547 (Hel.)
Davies, V., 305 (Misc.)
Davis, L. L., 152 (Z.), 459 (Oph.)
Day, H. B., 203, 532, 938 (Hel.)
De, A. B., with Sarkar, 718 (K.A.)
De, J. C., 458 (Oph.)
De, M. N., 253, 723 (K.A.)
De, P., with Chopra & Ghosh, 916 (Misc.)
Dechaux, with Senevet, 560 (Hel.)
Decrop, with Bourgin & Salle, 507 (Lep.)
——, & Crambes, 626 (Der.)
——, & Salle, 800 (Syph.)
Degroote, G., with d'Oelsnitz & Pin, 650 (Und.)
Dekester, M., 326 (Misc.), 860 (Lep.), 936 (Hel.)
——, with Jausion, 19, 20 (Am.)
—— & Martin, J. M., 335, 404 (Misc.), 626 (Der.)
——, & Melnotte, P., 704 (Dys.)
de la Combe, J., 76 (Ent.)
Delamare, G., (189) (Lep.), 736, 738 (R.F.), 839 (Misc.)
——, & Achitouv, 183 (Lep.), 265 *bis* (R.F.)
——, with Brun, 402 (Misc.)
——, Djémil, S., & Architouv, 918 (Misc.)
Delanoë, P., 159, (793) (Z.), 345, 687 (Am.), 703 (Dys.)
Delgado, E., with Ojero, Redondo, Blanco, Cid & Palanca, 594 (Mal.)
Delgado, H. F., (303) (Mal.)
Delpiano, G., 265 (R.F.)
Denis, W., with Silverman, 44 (Sp.)
Derby, G. S., 980 (Oph.)
Dervish, J., & Laigret, J., 381 (S.S.)
Deschiens, R., 357 *bis*, 358 (Dys.)
——, with Le Noir, 357 (Dys.), 535 (Hel.)
Destéfano & Vaccarezza, 974 (Hel.)
Dévé, F., 556 (Hel.)
Dew, H. R., 209 (Hel.)
Diamantis, 566 (Hel.)
Dickson, J. R., 468 (Misc.)
Dieckmann, A., 963 (Hel.)
Dinguizli, (336) (Misc.)
Dive, G. H., & Lafrenais, H. M., 963 (Hel.)
Dixon, W. E., 396 (Misc.)
Dixson, T. S., 302, 604 (Mal.)
Djamil, M., with de Langen, 409 (Misc.), 970 (Hel.)
Djémil, S., with Delamare & Architouv, 918 (Misc.)
Docherty, J. F., 234 (Hel.)
—— & Nicholls, L., 194 (Hel.)
Dock, W., 913 (Misc.)
Doerr, 694 (Dys.)
Dogiel, V., 426, 427 (Z.)
Dohi, K., 588 (B.R.)
Dolbey, R. V., & Abdullah El Katib (714) (Rab.)
——, Fahmy, I., 545 (Hel.)
——, & Mooro, A. W., 465 (Misc.), 988 (Tb.)
——, & Omar, M., 904 (Misc.)
Dold, H., 813 (Lab.)
Domingo, P., 646 (Und.)
Dominguez, M. M., with Pardo-Castello, 623 (Der.)
Donatien, A., with Sergent, Edm. & Parrot, 492 (Misc.)
Dong-Ngoc-Dieu & Millous, P. L. E., 8 (Der.), 450 (Chl.)
Donnell, N. R., 979 (Oph.)
van Dooren, T. P. C., 706 (Sp.)
Doorenbos, W., & Mulders, J., 354 (Dys.)
Dopter, 695 (Dys.)
Douglas, A. R. J., 522 (Lep.)
——, with Taylor, 487 (Misc.)
Dowling, G. A., 339 (Am.)
Draganescu, S., with Marinesco, 301 (618) (Mal.)
van Driel, B. M., 457 (Oph.), 867 (Lep.)
Drinkwater, H., 164 (B.R.)
Dschunkowsky, E., 808 (Lab.)
Dudgeon, L. S., 485 (Misc.)
Dudley, S. F., 356 (Dys.)
Duffau, H. E., 39 (Dys.), 816 (Lab.)
Duga, 537 (Hel.), 628 (Der.)
Dujarric de la Rivière, M. R., 741 (Fev.)
Duke, H. L., 46 (S.S.), 830 (Lab.)
Dumitresco-Mante, 87 (Misc.)
Duncan, J. T., 891 (Ent.)
——, with Low, 63 (Bl.)
——, & Manson-Bahr, P. H., 488 (Misc.)
Dunn, L. H., 153, 788 (Z.)
Dupuy, L., 65 (Bl.)
Dutton, L. O., 690 (Dys.)
Duval, C. W., & Harris, W. H., 658 (Fev.)
Dye, W. H., 427 (Z.), 798 (Ys.), 939 (Hel.)
Dyer, H. A., with Voegtlin & Leonard, 414 (Misc.)

E

Eagleton, with O'Brien, Sudmersen, MacConkey & Petrie, 696 (Dys.)
Earle, W. C., with Hill, 966 (Hel.)
Easmon, M. C. F., 343 (Am.)
Ebert, G., with Senevet, (161) (Z.)
Eckstein, F., 616 (Mal.)
Edwards, F. W., 163 (B.R.), 438, 780 (Z.)
Egypt, Ministry of the Interior, 875 (Pl.)

Eickelberg, T., 217 (Hel.)
Eijkman, C., 393, 844 (Misc.)
Elders, C., 705 (Sp.), 905 (Misc.)
Elliot, R. H., 455, 976 (Oph.)
Ellis, H. A., 244 (B.R.)
El Rasheed Bey, A. F., 461 (Oph.)
Elwes, F. F., Menon, V. K. N., & Ramakrishnan, P. S., 716 (K.A.)
Emile-Weil, P., & Lamy, M., 813 (Lab.)
Emmanuele, A., 398 (Misc.)
Engel, Fr., 181 (Lep.)
Engel, R., 571 (Hel.)
Engelhard, C. F., 408 (Misc.)
Enlows, E. M. A., 119 (Lab.)
Erber, B., 137 (Z.)
Ernst, J. R., (370) (Ys)
Escomel, E., 156, 792 (Z.), (618) (Mal.)
Esguerra, C., with Lleras Acosta & Vicente Huertas, 895 (Misc.)
Esquier, A., 205 (Hel.)
Etienne, G., & Benech, J., 301 (Mal.)
Eubanas, F., with Rodriguez, 520 (Lep.)
Evans, A. C., 104, 105, 106, 655 (Und.)
Evans, J. N., 460 (Oph.)
Evers, E., with Kudicke, 424 (Z.)
Ewing, H. E., 436 (Z.)
Eysell, A., 498 (B.R.)

F

Faber, L. A., 292 (Mal.)
Fabre, H., (238) (Hel.)
Fabris, A., 454 (H.S.)
Fahmy, I., with Dolbey, 545 (Hel.)
Fairley, K. D., 113 (Lab.), 207, 557 (Hel.)
Fairley, N. H., & Liston, W. G., 567, 956 (Hel.)
Famulener, L. W., with Bastedo, 360 (Sp.)
Fanconi, G., 957 (Hel.)
Fantham, H. B., 242 (Z.)
Faraker, E., 793 (Z.), 842 (Misc.)
Far Eastern Association of Tropical Medicine, 631 (Bb.), 999 (B.R.)
de Faria, J. G., 108, 282 (Fev.)
Faust, E. C., 31 (Am.), 157 (Z.), 191, 206, 541, 930, 936, 941 (Hel.), 665 (Fev.)
——, with Meleney, 201, 202 (Hel.)
Federated Malay States, 833 (Lab.)
Fejgin, B., 353 (Dys.), 394 (Misc.)
Feldt, A., with Kudicke & Collier, 731 (R.F.)
Felix, J. E., with Pestonjee & Nicholls, 870 (Lep.)
Felsenreich, G., & Satke, O., 359 (Dys.)
v. Fenyvessy, B., & Reiner, L., 775 (Z.)
Ferguson, A., 982 (Oph.)
Ferguson, E. W., 153 (Z.)
Ferguson, J., & Tudhope, G. R., 207 (Hel.)
Fermi, C., 711 (Rab.)
Fernandez, H. E., 317 (Misc.)
Fernando, A. S., 176 (Lep.), 638 (Bb.)
Ferreira, C., 993 (Tb.)
Ferri, G., 793 (Z.)
Field, F. E., 581 (Hel.)
Figueira, L., 713 (Rab.)
Findlay, G. M., 528 (Diet.)
Finny, C. M., 454 (H.S.)
Fischer, M., 524 (Pel.)
Fischer, W., 961 (Hel.)
——, with Kleine, 56 (S.S.)
Fischoeder, E., 580 (Hel.)
Fisher, H. C., 779 (Z.)
Fisher, W. A., 981 (Oph.)
Fleming, W. D., (418) (Misc.), 636 (Bb.)
Fletcher, T. B., 789 (Z.)
Fletcher, W., & Jepps, M. W., 419 (B.R.)
——, & Travers, E. A. O., 93 (Misc.)
Flu, P. C., 887 (Chl.)
Foley, H., & Picout-Laforest A., 438 (Z.)
——, with Sergent, Edm. & Parrot, 978 (Oph.)
Foltz, P., with Businco, 612 (Mal.)
Fontana, L., 755 (S.S.)
Fontoynont, 300, 301 (Mal.)
——, & Boucher, H., 2 (Der.)
Fonzo, F., 251 (K.A.)
Foot, K., with Sergent, Edm., 145 (Z.)
Fornaca, L., & Bua-Fazio, F., 647 (Und.)
Fornara, L., 791 (Z.)
Forschbach, J., 589 (B.R.)
Forsyth, W. L., 923 (Misc.)
Foster, J. H., 926 (Misc.)
——, with Lung (78) (Ent.)
Foucar, F. H., 607 (Mal.)
Fouché, F. P., 324 (Misc.)
Foulkes, D., with Colombe, 436 (Z.)
Fourcade, A., & Le Bourdellès, B., (663) (Fev.)
Fourneau, E. Navarro-Martin, A., & Tréfouël, M. & Mme., 322 (Misc.)
——Tréfouël, J., Tréfouel, Mme., & Vallée, J. 379 (S.S.)
Fowler, J. K., 744 (Y.F.)
Fox, E. C. R., McDonald, E. J. C., & Young, T. C. M., 406 (Misc.)
Fox, H., 1003 (B.R.)
Fox, L. W., 977 (Oph.)
Fraissinet & Martin, 91 (Misc.)
Franchini, F., 345, 346 (Am.)
Franchini, G., 134, 423, 426 (Z.)
Francis, E., 477 (Misc.)
——, with Parker & Spencer, 791 (Z.)
François-Dainville, E., 596 (Mal.)
Françon, F., & Hutinel, J., 685, 687 (Am.)

Frank, R. T., (630) (Der.)
Fraser, A. R., 4 (Der.)
Fraser, H., 680 (B.R.)
Freeborn, S. B., 781 (Z.)
de Freitas, L., & Barretto, C., 288 (Mal.)
de Freitas, O. M., 617 (Mal.)
de Freitas, Q. B., 298 (Mal.), 801 (Syph.)
French, R. W., 117 (Lab.)
——, with Scott, 111 (Lab.)
Frendo, J. A., 508 (Lep.)
Freund, J., 129 (Lab.)
Freund, R., with Morgenroth, (384), 757 (S.S.)
Freudmann, S., with Kabelik, 74 (Chl.)
Frew, 994 (Tb.)
Fritz, O., 216 (Hel.)
Froemsdorff, C., 700 (Dys.)
Fróes, H. P., 273 (Fev.)
Fróes, J. A. G., 745 (Y.F.)
Fronticelli, E., 609 (Mal.)
Fukamachi, T., with Aoki, Kawamura & Kamikawa, 870 (Lep.)
Fukushima, H., 891 (Ent.)
Fülleborn, F., 193, 219 *bis*, 228, 229, 236, 558, 575, 579 (Hel.)
Fuller, C., 785 (Z.)
Funaioli, G., 691 (Dys.)
Funaki, H., 937 (Hel.)
Fusco, G., 840 (Misc.)

G

van Gaasbeek, C. B., 466 (Misc.)
Gabbi, U., 589 (B. R.)
Gage, I. M., 11 (Der.)
Galamini, A., 145 (Z.)
Galdi, F., 617 (Mal.)
Galli-Valerio, B., 159 (Z.), 627 (Der.)
——, & de Werra, M., 153 (Z.)
Gallie, W. E., & Brown, A., 573 (Hel.)
Galmozzi, F., 24 (Am.)
Gamaleia, 74 (Chl.)
Gambier, A., (160) (Z.)
Gaminara, A., 375 (S.S.)
——, & Rinaldi, M., 560 (Hel.)
Ganguli, P., 715 (K.A.)
Ganguly, S. K., 456, 458 (Oph.)
Garcia, C. L., 957 (Hel.)
Garcia Medina, P., 174 (Lep.)
Gardner, A. D., 36 (Dys.)
Gardner, G. H., with Lamson, Gustafson, Maire, McLean & Wells, 411 (Misc.)
Garin, C., 661 (Fev.)
Gaston, P., 262 (R.F.)
Gauthier, A., 354 (Dys.)
Gautier, M. A., 835 (Misc.)
Gedoelst, L., 152 (Z.)
de Gedroyc, M., 712 (Rab.), 773 (Z.)
Geens, J., with van Boeckel, 314 (Misc.)
Gehringer, G. M., 197 (Hel.)
de Gennes, with Boidin, 446 (Pl.)
Georgelin, 375 (S.S.), 629 (Der.)
——, with Clapier, 629 (Der.)
Georgi, with Westphal, 40 (Dys.)
Gerlach, W., (975) (Hel.)
Gerschenowitsch, R. S., 719 (K.A.)
Gerstmann, J., 615 (Mal.)
Ghosh, B. N., with Chopra & De, 916 (Misc.)
Ghosh, N. N., 980 (Oph.)
Gibson, A., 786 (Z.)
Gideon, C. S., 468 (Misc.)
Giemsa, G., 809 (Lab.)
——, & Sei, S., 490 (Misc.)
Gieszczykiewicz, M., & Lipinski, W., 695 (Dys.)
Gifford, H., 461 (Oph.)
Giglioli, G., 580, 972 (Hel.)
Gilbert, R., & Bartels, H. A., 809 (Lab.)
Gilks, J. L., 190 (Hel.), 364 (Ys.)
Gill, C. A., 285, 294 (Mal.)
Gill, G. B., with Manson-Bahr, 473 (Misc.)
Gilmer, P. M., 436 437 (Z.)
Gioseffi, M., 682 (Am.)
Giraldi, S., 273 (Fev.)
Girard, with Bouffard, 69 (Pl.)
Giraud, P., with d'Astros & Raybaud, 253 (K.A.)
——, & Zucarelli, J., 724 (K.A.)
Girgensohn, R. (975) (Hel.)
Girgis, A. M., 455 (Oph.)
Gislen (370) (Ys.)
Gjessing, H. G. A., 456 (Oph.)
Gladstone, H. B., 156 (Z.)
Glaister, A. H., 131 (Lab.)
Glaser, R. W., 146, 783 (Z.)
Glotoff, E., 73 (Chl.)
Gloyne, S. R., with Bassett-Smith, 996 (Tb.)
Gobert, E., with Anderson, 545 *bis* (Hel.)
Goebel, F., 533 (Hel.)
Goedbloed, C. A. G., 37 (Dys.)
Goelam, with Radsma, 399 (Misc.)
Goldberger, J., & Tanner, W. F., 525 (Pel.)
——, Waring, C. H., & Tanner, W. F., 525 (Lep.)
Goldsmith, A. A., & Greene, E. I., 343 (Am.)
Golov, D. A., & Ilovaisky, S. A., 883 (Pl.)
Golovanoff, M., 447 (Chl.)
——, with Besredka, 447 (Pl.)
Gomes, E., 513 (Lep.)
Gomes, J. M., 624 (Der.), 873 (Lep.)
Gomez, L., 172 (Lep.)
—, & Navarro, R., 405 (Misc.)

Gonsalves, M., & Haslam, J. F. C., 993 (Tb.)
Gonsalves, N. B., 711 (Rab.)
Gonzaga, G., 873 (Lep.)
Goodey, T., 236 (Hel.)
Goodman, N. M., 301 (Mal.)
Gordon, R. M., 27 (Am.), 301 (Mal.), 396 (Misc.)
——, with Stephens, 609 (Mal.)
Gottschalk, C., 641 (Sc.)
Goudsmit, J., 951 (Hel.)
Gouzien, P., 279 (Y.F.)
Graham, G. F., with Stocker, 880 (Pl.)
Grandsoult, G. A., 534 (Hel.)
Grant, A. R., 295 (Mal.)
——, Silverston, J. D., (618) (Mal.)
Grantham-Hill, C., 93 (Misc.)
Grassi, B., 616 *bis* (Mal.), 780 (Z.)
Green, H. W., 432 (Z.)
Greene, E. I., with Goldsmith, 343 (Am.)
Greene, J. L., & Scully, F. J., 42 (Dys.)
Greenway, D., 532, 553, 557 (Hel.)
——, with Castex, 425 (Z.)
Greenwood, with Arkwright, J. A., 673 (Misc.)
Gregory, A., 729 (R. F.)
Gregory, J. W., 899 (Misc.)
Grove, B. H., 976 (Oph.)
Gruber, G. B., 547 (Hel.)
Gruhzit, O. M., 10 (Der.)
Grunenberg, K., 524 (Pel.)
Gubin, V. M., 778 (Z.)
Gueidon, E., with Sergent, Et., 725 (K.A.)
——, with Sergent, Et., Bouguet & Catanei, 728 (K.A.)
Guérin, F. H., 953 (Hel.)
——, & Lalung-Bonnaire, 985 (Tb.)
Guerrero, L. E., 867 (Lep.)
——, with Sison, A. B. M., Makalintal, A., Villaseñor, P., Rosal, I., & Ocampo, A., 535 (Hel.)
Guerrero, P., 237 (Hel.)
Guichard, F., & Jausion, H., 623 (Der.)
Guillerm, J., with Bernard, 635, 636 (Bb.)
Guimarães, A. G., 301 (Mal.)
Guimarães, A., Lima, M. de S., & Pisa, A. de T., 34 (Dys.)
Guinon, de Pfeffel & Lamy, 69 (Pl.)
Gulland, G. L., & Buchanan, G., 742 (Jaun.)
Gupta, J. C., with Chopra & Knowles, 604 (Mal.)
– –, with Knowles, Chopra & Das Gupta, 366 (Ys.)
Gustafson, R. K., with Lamson, Gardner, Maire, McLean & Wells, 411 (Misc.)
Gutierrez, P. D., 794 (Ys.)
Guzmán, P. A., 212 (Hel.)

H

Hackenthal, H., 812 (Lab.)
Hacker, H. P., 778 (Z.)
Haga, J., 564 (Hel.)
——, with Brug, 155, (160) (Z.)
Hagman, G. L., 181 (Lep.)
Hajek, K., (714) (Rab.)
Halbron, P., 649 (Und.)
Hall, G. R., (66) (Bl.)
Hall, M. C., 789 (Z.), 934 *bis* (Hel.)
– –, & Shillinger, J. E., 583 (Hel.)
Hamerton, A. E., 83 (Misc.)
Hamet, 387 (Bl.)
Hamzah, M., 182 *bis*, 522 (Lep.)
Hance, J. B., 715 (K.A.)
Hara, C., with Tsurumi, Imai, Awoki & Sakamoto, 68 (Pl.)
Hara, M., with Ohomori, Ohhashi, Nakanishi & Ohta, 632 (Bb.)
Harada, S., (75) *bis* (Chl.)
——, with Nomura, & Hokama, (75) (Chl.)
Harford, C. F., 398 (Misc.)
Hargreaves, E., 145 (Z.)
Harjas Rai, 349 (Dys.)
Härle, A., Sütterlin, Th., & Zeiss, H., 192 (Hel.)
Harold, C. H. H., 142 (Z.)
Harris, H. E., (238) (Hel.)
Harris, W. H., with Duval, 658 (Fev.)
Harston, G. M., 981 (Oph.)
Hartmann-Keppel, G. L., 21 (Am.)
Harvey, W. F., 133 (Lab.)
——, & Acton, H. W., 84 (Misc.)
——, & Iyengar, K. R. K., 122 (Lab.)
Hasegawa, T., 952, 962, 963 (Hel.)
Haslam, J. F. C., with Gonsalves, 993 (Tb.)
Hasseltine, H. E., 505, 506 (Lep.)
Hatai, K., with Suzuki & Tokuye, 692 (Dys.)
——, with Tokuye, 691 (Dys.)
Haughwout, F. G., with Leach & Ash, 972 (Hel.)
——, with ——, C. N., Schwartz, & Leach, F. D., 226 (Hel.)
Haupt, W., 427 (Z.)
Hauvuy, L. E., 690 (Dys.)
Havens, L. C., with Maxcy, 662 (Fev.)
Hayashi, N., & Takeuchi, N., 664, 927 (Fev.)
Hayashi, S., 971 (Hel.)
Hayes, C. A., 980 (Oph.)
Hayne, T. B., with Barber, 429, 430 (Z.)
——, with —— & Komp, 430 (Z.)
Hazebroek, F. E. A., 801 (Syph.)
Heckenroth, F., 70 (Pl.), 607 (Mal.)
——, & Bédier, E., 926 (Misc.)
Hefferman, L. W., 42 (Dys.), 417 (Misc.)

Heggs, T. B., 183 (Lep.), 441, 877, 879 (Pl.)
Hegner, R. W., (160), 422, 772 (Z.), 703 (Dys.)
——, & Taliaferro, W. H. 43 (B.R.)
Hehir, P. (663) (Fev.)
Heinemann, H., 612 (Mal.)
Henkes, K., with Hull, 700 (Dys.)
Henry, 513 (Lep.), 846 (Misc.)
Henry, T. A., & Brown, H. C., 701 (Dys.)
Hermann, R., with Sédan, 979 (Oph.)
Herrera, A. L., (133) (Lab.)
Herrmann, G., 614 (Mal.)
Hertig, M., & Wolbach, S. B., 781 (Z.)
Herxheimer, G., 186, 520 (Lep.)
Herzig, E., 297 (Mal.)
Herzog, B. M., with Zdansky, 699 (Dys.)
Hess, A. F., & Weinstock, M., 642 (Sc.)
Hetherington, D. C., 559 (Hel.)
Hetsch, H., 711 (Rab.)
Hewett, G., 320 (Misc.)
Heydon, G. M., 286 (Mal.), 986 (Tb.)
——, & Murphy, T. W., 840 (Misc.)
Heymann, P., 340 (Am.)
Hieta, K., 743 (Jaun.)
Higgins, J. T. D. S., 659 (Fev.)
Hill, G. F., 146 (Z.)
Hill, H. W., 329 (Misc.)
Hill, O. A. R. B., 408 (Misc.)
Hill, R. B., 223 (Hel.)
——, with Cort, Riley & Payne, 223 (Hel.)
——, & Earle, W. C., 966 (Hel.)
——, & Sanchez, A., 949 (Hel.)
Hines, L. E., 23, 24, (Am.), 707 (Sp.)
Hiraishi, S., 960 (Hel.)
Hirsch, J., 888 (Chl.)
Hirschberg, M., (189) (Lep.)
Hirst, L. F., 70 (Pl.), 968 (Hel.)
Hisikari, S., (160) (Z.)
Hiyama, T., with Saito & Nagamine, 932 (Hel.)
Hoare, C. A., 427 (Z.)
Hobson, S., 233 (Hel.)
Hodson, V. S., 191, 940 (Hel.)
Hoffmann, W. H., (18) (Der)., 148 (Z.), 301 (Mal.) 332, 333, (336) 497, (Misc.), 743 *bis* (Jaun.)
Hokama, G., with Nomura & Harada, (75) (Chl.)
Holland, H. T. 980, 981 (Oph.)
Hollander, B., 324 (Misc.)
Hollander, E., 136 (Z.)
Holtappel, K. J., 486 (Misc.)
Holth, S., 981 (Oph.)
Holthusen, H., 958 (Hel.)
Holtzer, R., with Aristowsky, 269 (R.F.)
Honda, I., 567 (Hel.)
van Hoof, L., 732 (R.F.), 805 (Bl.), 845 (Misc.)
——, with van den Branden, 372, 376 (S.S.), 797 (Ys.), 390, 919 (Misc.)
Hoops, A. L., & Scharff, J. W., 999 (B.R.)
Höppli, R., & Kessler, A., 915 (Misc.)
Hornus, P., 83 (Misc.)
Horta, P., 621 (Der.)
Horwitz, H. L., 626 (Der.)
Hosone, S., 580 (Hel.)
Howard, H. J., 457, 978 (Oph.)
Howard, L. O., 781 (Z.)
Howard, R., 368 (Ys.)
Hu, C. H., with Phelps, 915 (Misc.)
Huck, J. G., 670 (Misc.)
——, & Bowden, D. T., 608 (Mal.)
——, with Taliaferro, 926 (Misc.)
Hudellet, 17 (Der.), (189) (Lep.)
Huerta, P., 746 (S. S.)
Huizenga, L. S., 181 (Lep.)
Hull, T. G., & Henkes, K., 700 (Dys.)
Hung-See-Lü, 34 (Am.)
Hunt, D., (336) (Misc.), 455 (Oph.)
Huot, N. L., 51, 374 (S.S.)
Hurwood, A. S., 432 (Z.)
Hürzeler, O., (975) (Hel.)
Hutchinson, R. & Paterson, D., 523 (Pel.)
Hutinel, J., with Françon, 685, 687 (Am.)

I

Iacobellis, G., 460 (Oph.)
Ibrahim, A., 200 (Hel.)
Ichimiya, I., 539 (Hel.)
Iglesias Garza, T., 724 (K.A.)
Iijima, T., 36 (Dys.)
Ikeda, T., 640 (Bb.)
Ikegami, Y., 799 (Ys.)
Illert, E., 268 (R.F.)
Ilovaisky, S. A., with Golov, 883 (Pl.)
Ilvento, A., (71) (Pl.)
Imai, M., with Tsurumi, Hara, Awoki & Sakamoto, 68 (Pl.)
Impey, S. P., 511 (Lep.)
Inadama, S., 552 (Hel.)
Indian Medical Record, 246 (K.A.)
Ingram, A., 732 (R.F.)
——, with Selwyn-Clarke & Le Fanu, 266 (R.F.)
Inouye, Z., with Yamada & Kakinuma, 355 (Dys.)
Ioff, I., 116 (Lab.)
——, & Boschenko, W., 596 (Mal.)
Irvine, A. C., 920 (Misc.)
Isabolinsky, M., 713 (Rab.)
Isbecque, G., 531 (Hel.)

Ishikawa, T., with Nobechi, 75 (Chl.)
Isobe, M., 550 (Hel.)
Ithurrat, P. F. & Calcagno, B. N., 208 (Hel.)
Iyengar, K. R. K., with Caius, 158 (Z.)
——, with Harvey, 122 (Lab.)
Iyengar, M. O. T., (160) (Z.)
Iyer, T. S., with Cruickshank & Cunningham, 211 (Hel.)

J

Jachontoff, I. E., 30 (Am.)
Jack, R. W., 149, 435 (Z.)
Jackson, J. H. S., 484, 975 (Misc.)
Jacobides, A., 982 (Oph.)
Jacocks, W. P., 965 (Hel.)
Jaeger, C., 228 (Hel.)
Jamieson, T. H., 44 (Sp.)
Jamin, H., 629, (630) (Der.)
Jamison, S. C., 671 (Misc.)
Jamot, with Tanon, 370 (Ys.)
Janicki, C., 532 (Hel.)
Jaroschka, K., 961 (Hel.)
Jaureguiberry, 1004 (B.R.)
Jausion & Dekester, 19, 20 (Am.)
Jausion, H., with Guichard, 623 (Der.)
Jean & Sedallian, P., 644 (Und.)
Jeanselme, M. E., 176 (Lep.), 904 (Misc.)
Jepps, M. W., 421 (Z.)
——, with Fletcher, 419 (B.R.)
Jeudwine, W. W., 408 (Misc.)
Jewell, N. P., 910 (Misc.)
Jiménez, J. B., & Cuenca, H., (18) (Der.)
Jitta, N. M. J., 877 (Pl.)
Johnson, W. B., with Lloyd, 760 (S.S.)
Johnstone, F. J. C., 459 (Oph.), 482 (Misc.)
Jojot & Laigret, 16 (Der.)
Jolly, G. G., 79 (Diet.)
Joltrois, with Leconte, 277 (Jaun.)
Jones, S. B., 201 (Hel.)
Jonesco, D., with Babés, 712 (Rab.)
de Jong, D. A., 324 (Misc.)
Jorge, R., 443 (Pl.)
Journal of Ayurveda, 847 (B.R.)
Journal of the Department of Agriculture, Pretoria, 435, 787 (Z.)
Journal of Laboratory and Clinical Medicine, 131 (Lab.)
Journal of the Royal Naval Medical Service, 271 (R.F.), 659 (Fev.)
Joyeux, C., 15 (Der.), 930 (Hel.)
——, with Brumpt, 388 (Misc.)
Julianelle, L. A., with Small, 12 (Der.)
Junès, E., 461 (Oph.)
Juniper, A. B., (82) (Diet.)
Justi, K., with Müller, 462 (Misc.)

K

Kabelík, J., & Freudmann, S., 74 (Chl.)
Kachi, G., & Tashiro, S., 532 (Hel.)
Kagoshima, S., with Kawakiya & Suzuki, 98 (Bb.)
——, with Ogata, Kawakita & Suzuki, 98 (Bb.)
——, with ——, ——, —— & Oka, 632 (Bb.)
Kai, T., 274 (Jaun.), 580 (Hel.)
Kakinuma, R., with Yamada & Inouye, 355 (Dys.)
Kamikawa, Y., with Aoki, Kawamura & Fukamachi, 870 (Lep.)
Kamiza, R., 639 (Bb.)
Kantor, J. L., 358 (Dys.)
Kapadia, R. J., with Stevenson, 882 (Pl.)
Karkarey, P. B., 704 (Dys.)
Kasama, Y., 548 *bis* (Hel.)
——, with Kawamura, 549, 551 (Hel.)
Kasuga, K., 891 (Ent.)
Katayama, T., with Oba & Sumi, 276 (Jaun.)
——, with —— . & Washimi, 277 (Jaun.)
Katsuma, S., 640 (Bb.)
Kauders, O., with Dattner, 614 (Mal.)
Kauntze, W. H., 788 (Z.), 795 (Ys.), 828 (Lab.)
Kawai, N., 74 (Chl.)
Kawakita, S., with Ogata, Suzuki & Kagoshima, 98 (Bb.)
——, with ——, Kagoshima, Suzuki & Oka, 632 (Bb.)
Kawakiya, S., Suzuki, S., & Kagoshima, S., 98 (Bb.)
Kawamura, H., with Shiga & Tsuchiya, 697 (Dys.)
Kawamura, M., with Aoki, Kamikawa & Fukamachi, 870 (Lep.)
Kawamura, R., & Kasama, Y., 549, 551 (Hel.)
——, ——, & Tanaka, S., 947 (Hel.)
——, Ohmori, C., & Tanaka, S., 948 (Hel.)
Kay, H. D., & Zilva, S. S., 643 (Sc.)
Käyser, J. S., 186 (Lep.)
Kazama, Y., with Kawamura & Tanaka, 947 (Hel.)
Keck, A., 349 (Dys.)
Keefer, C. S., 655 (Und.)
Kehrer, J. K. W., & Soemadijono, 234 (Hel.)
Keilin, D., 787 (Z.)
Kellersberger, E. R., 926 (Misc.)
Kelly, W. P., 926 (Misc.)
Kemmerer, T. W., with Williams (71) (Pl.)
Kendrick, J. F., with Mhaskar, 227, 233 (Hel.)

Kenya, Colony & Protectorate of, 190 (Hel.), 788 (Z.), 795 (Ys.), 828 (Lab.)
Kenya Medical Journal, 795 (Ys.)
Képinov, L., 888 (Chl.)
Kérandel, 984 (Tb.)
Kersten, H. E., with Lange, 379 (S.S.)
Kessel, J. F., 345 (Am.)
Kessler, A., with Höppli, 915 (Misc.)
Keukenschrijver, N. C., 678 (Misc.)
Khaled, Z., 656 (Und.) 662 (Fev.)
Khalil, M., 542 (Hel.)
——, with Anderson, Lee & Leiper, 563 (Hel.)
——, & Shawky, I., 41 (Dys.)
Khazan Chand, with Christophers, 597 (Mal.)
Kidd, L. J., 511 (Lep.)
Kiefer, K. H., with Bach (159) (Z.)
Kieffer, J. J., with Baqué, (159) (Z.)
Kiep, W., 458 (Oph.)
Kiewiet de Jonge, G. W., 492, 677 (Misc.)
Kimball, O. P., 403 (Misc.)
Kimberlin, J. W., 214 (Hel.), 460 (Oph.)
King, H. H., 783 (Z.)
King, M. R., 88 (Misc.)
King, W. G., 635 (Bb.), 884 (Pl.)
King, W. V., & Bull, C. G., 143, (160) (Z.)
——, with ——, 143 (Z.)
Kirschbaum, W., with Mühlens, 613 (Mal.)
Kirschner, L., 712 (Rab.), 819 (Lab.)
Kishida, K., 156 (Z.)
Kister, 445 (Pl.)
Kleine, F. K., 380, 763, *bis* (S.S.), 926 (Misc.)
——, & Fischer, W., 56 (S.S.)
Kliewe, H., 808 (Lab.)
Kligler, I. J., 63 (Bl.), 258 (K.A.), 299 (Mal.), 726 (K.A.), 779 (Z.)
——, & Weitzmann, I., 298 (Mal.)
Knighton, J. E., 703 (Dys.)
Knights, E. M., 818 (Lab.)
Knipping, H. W., 323 (Misc.)
Knorr, M., 349 (Dys.)
Knowles, R., 162 (B.R.)
——, with Acton, 602 (Mal.)
——, with Chopra & Gupta, 604 (Mal.)
——, ——, ——, & Das Gupta, B. M., 366 (Ys.)
——, & Das Gupta, S. A. S. B. M., 281. (Fev.), 427 (Z.)
Kobayashi, H., 539, 541 (Hel.)
Kobayashi, Y., 636 (Bb.)
Kobori, K., with Ando, 938 (Hel.)
Kofoid, C. A., & Swezy, O., (160), 773 (Z.), 688 (Am.)
Kohgame, Y., with Asada, 569 (Hel.)
Koino, S., 570 (Hel.)
Koki, S., 570 (Hel.)
Kollath, W., & Lubinski, H., 888 (Chl.)
Kolmer, J. A., with Schamberg, 8 (Der.)
——, with Yagle, 186 (Lep.)
Kolpakowa, T. A., 933 (Hel.)
Komp, W. H. W., (160) (Z.)
——, with Barber & Hayne, 430 (Z.)
Kondo, Y., 640 (Bb.)
Konokhov, 780 (Z.)
Koo, U. K., 196 (Hel.)
Koose, W., 650 (Und.)
Korobkova, E., & Zénine, A., 886 (Chl.)
Korsbjerg, A., 403 (Misc.)
de Korte, W. E., 17 (Der.)
Korteweg, P. C., 606 (Mal.)
Korthof, G., 818 (Lab.)
Kortzeborn, A., 573 (Hel.)
Kostrzewski, J., 353 (Dys.)
Kosuge, I., 560, 951 (Hel.)
Kouwenaar, W., 737 (R.F.)
Krassnig, M., (303) (Mal.)
Kraus, R., 184 (Lep.)
Krimer, M., 961 (Hel.)
Kritschewsky, J. L., & Brussin, A. M., 758 (S.S.)
——, & Muratoffa, A. P., 386 (Bl.)
Kroó, H., with Buschke, 268 (R.F.)
Kudicke, R., 589 (B.R.)
——, & Evers, E., 424 (Z.)
——, Feldt, A., & Collier, W. A., 731
Kuenen, W. A., with Schüffner, 274 (Jaun.)
Kuijer, A., 677 (Misc.)
Kujo, K., 185 (Lep.)
——, & Chuma, M., 185 (Lep.)
Kundratitz, N., 349 (Dys.)
Kuttner, L., & Loewenberg, W., (66) (Bl.)
Kuwabara, S., & Mutô, M., 197 (Hel.)
Kuwahara, S., & Mutô, M., 541 (Hel.)

L

Labernadie, V., & Peyre, E., 272 (R.F.)
Lacat, 461 (Oph.)
Lacouture, M., with Verdelet, 957 (Hel.)
La Favre, H. B., 689 (Dys.)
Lafont, A., 341 (Am.), 466, 476 (Misc.)
La Frenais, H. M., with Cornwall, 452 (Ent.)
——, with Dive, 963 (Hel.)
Lagrange, H., with Bollack, 460 (Oph.)
Laignel-Lavastine, Boutet, Serrant & Arbeit, 742 (Fev.)
Laigret, J., with Blanchard, 752, 756 (S.S.), 924 (Misc.), 934, 955 (Hel.)
——, with Dervish, 381 (S.S.)
——, with Jojot, 16 (Der.)
——, with Nattan-Larrier, 313 (Misc.)
Lake, G. C., & Probey, T. F., 61 (S.S.)
Lal, S. M., 537 (Hel.)

Lalung-Bonnaire with Guérin, 985 (Tb.)
——, & Pons, R., 476 (Misc.)
Lambert, J., 659 (Fev.)
Lambert, S. M., 219, 233 (Hel.)
Lambinet, J., 230 (Hel.)
Lamson, P. D., Gardner, G. H., Gustafson, R. K., Maire, E. D., McLean, A. J., & Wells, H. S., 411 (Misc.)
Lamy, M., with Emile-Weil, 813 (Lab.)
——, with Guinon & de Pfeffel, 69 (Pl.)
Lancelin, with Dargein, 609 (Mal.)
Landeman, E., with Muir, Roy & Santra, 179 (Lep.)
Landon, E., 914 (Misc.)
Lane, C., 230, 536, 574 (Hel.), 849 (Mal.)
Lange, L., & Kersten, H. E., 379 (S.S.)
de Langen, C. D., 29 (Am.), 576 (Hel.)
——, & Djamil, M., 409 (Misc.), 970 (Hel.)
— —, & Lichenstein, A., 409 (Misc.), 420 (B.R.)
—— , & van Loon, F. H., 663 (Fev.)
Langer, E., with Buschke, 524 (Pel.)
Langeron, M., 544 (Hel.), 921 (Misc.)
——, with Ota, 619 (Der.)
Langrishe, J. du P., 428 (Z.)
Lapenta, V. A., (975) (Hel.)
Lara, C. B., 178 (Lep.)
— —, with Wade, 867 (Lep.)
Laroche, G., & Dauptain, 277 (Jaun.)
Larrousse, F., (160) (Z.)
Lasbrey, F. O., & Coleman, R. B., 944 (Hel.)
Lasnet & Trabaud, 984 (Tb.)
Laubenheimer, K., 396 (Misc.)
Laurency, with Bédier & Baury, 600 (Mal.)
Laurinsich, A., 347, 348 (Dys.)
Lavier, G., with Libert, 136 (Z.)
Lawrynowicz, A., & Alisow, P., 733 (R.F.)
Leach, C. N., Haughwout, F. G., & Ash, J. E., 972 (Hel.)
——, Schwartz, B., & Leach, F. D., with the co-operation of Haughwout, F. G., 226 (Hel.)
Leach, F. D., with Leach, C. N., & Schwartz, with the co-operation of Haughwout, 226 (Hel.)
League of Nations, 498 (B.R.), 694, 697 (Dys.)
League of Red Cross Societies, 839 (Misc.)
Leão, A. E. de A., 131 (Lab.), 257 (K.A.), 70, 622 (Der.)
Le Bas, G. Z. L., 543 (Hel.)
Le Bourdellès, B., with Fourcade, (663) (Fev.)
Le Chuiton, 211, 954 (Hel.)
Leclerc, H., 416 *bis* (Misc.)
Le Comte, A., 94 (Misc.)
Leconte, M., & Joltrois, 277 (Jaun.)
Le Dantec, 70 (Pl.), 310, 404, 921 (Misc.), 679 (B.R.)
Le Dentu, R., 90 (Misc.), 215 (Hel.), 307, 490 (Misc.)
Lee, C. U., (975) (Hel.)
——, with Anderson, Khalil & Leiper, 563 (Hel.)
Le Fanu, G. H., with Selwyn-Clarke & Ingram, 266 (R.F.)
Le Févre de Arric, M., & Tchang Kouo-Ngen, J., 710 (Rab.)
Lefrou, G., 806 (Bl.)
——, with Blanchard, 385 (Bl.), 755 (S.S.)
Legendre, J., 144, 429 (Z.)
Leger, A., 86 (Misc.), 369 (Ys.)
——, & Couput, A., 787 (Z.)
Leger, M., 989 (Tb.)
——, & Baury, A., 68, 878 (Pl.)
——, with Boulay, 543 (Hel.)
—— & Nogue, M., 3 (Der.)
——, with ——, 30 (Am.)
——, with Remlinger & Teppaz, 85 (Misc.)
——, with Reynaud, 197 (Hel.)
Leidy II, J., 531 (Hel.)
Leiper, R. T., 929 (Hel.)
——, with Anderson, Khalil & Lee, 563 (Hel.)
Leipoldt, C. L., (418) (Misc.)
Leiva, L., (160) (Z.), 963 (Hel.)
Lennox, W. G., 88 (Misc.)
Le Noir & Deschiens, R., 357 (Dys.), 535 (Hel.)
Leon, N., 439 (Z.)
Leonard, C. S., with Voegtlin & Dyer, 414 (Misc.)
Leonard, T. M. R., 346 (Am.), 553 (Hel.)
Le Roy des Barres, 464, 904 (Misc.), 957, (975) (Hel.)
Leslie, P. C., 287 (Mal.)
Lesné, E., & Vagliano, M., 642 (Sc.)
Lessa, G., 53 (S.S.)
Le Sueur, E. J. O., with Marjoribanks, 949 (Hel.)
Lethem, W. A., 70 (Pl.)
Levaditi, C., & Nicolau, S., 382 (S.S.), 672 (Misc.)
——, ——, & Schoen, R., 708 (Rab.)
Levy, M. D., 301 (Mal.)
Lévy, P. P., with Martel, Renault & Cesari, 645 (Und.)
Lewis's Library, 848 (B.R.)
Lewis, P. A., & Aronson, J. D., 185 (Lep.)
Lhuerre, H., with Nogue, 7 (Der.)
Li, K. H., 931 (Hel.)
Li, T. M., 976 (Oph.)
Libby, W. E., 947 (Hel.)
Libert, E., & Lavier, G., 136 (Z.)
Lichtenstein, A., 29 (Am.), 96 (Bb.)

Lichtenstein, A., with de Langen, 409 (Misc.), 420 (B.R.)
Lichtenstein, L., 602 (Mal.)
v. Liebenstein, 916 (Misc.)
Lignac, G. O. E., 610 (Mal.)
Lignières, J., 467 (Misc.)
Lima, M. de S., with Guimaraes & Pisa, 34 (Dys.)
Limkako, G., with Samson, 519 (Lep.)
Limousin, H., 521 (Lep.)
Lindner, K., 456 (Oph.)
Lindtrop, H., with Sdrodowski, 291 (Mal.)
Ling, W. P., 459, 983 (Oph.)
Lins, A. E. E., 134 (Z.)
Liotard, with d'Oelsnitz, 649 (Und.)
Liotta, D., 100 *bis* (Sc.)
Lipinski, W., 356 (Dys.), 894 (Misc.)
——, with Gieszczykiewicz, 695 (Dys.)
Lipschitz, W., 640 (Bb.)
Lister, S., 462, 834 (Misc.)
Liston, W. G., 876 (Pl.)
——, with Fairley, 567, 956 (Hel.)
Little, E. G. G., 865 (Lep.)
Ljachowezki, A. M., 605 (Mal.)
Lleras Acosta, F., Vicente Huertas, J., & Esguerra, C., 895 (Misc.)
Lloyd, L., & Johnson, W. B., 760 (S.S.)
Lloyd, R. B., & Chandra, S. N., 812 (Lab.)
——, Muir, E., & Mitra, G. C., 185, 866 (Lep.)
Loewenberg, W., with Kuttner (66) (Bl.)
Löhlein, M., 36 (Dys.)
Loiselet, J., 687 (Am.)
Lombardo, C., 621 (Der.)
van Loon, F. H. G., 467 (Misc.)
——, with de Langen, 663 (Fev.)
Lopes, R. de S., 41 (Dys.)
Lopez-Lomba, J., 80 (Diet.)
Loro, H. A. M., 624 (Der.)
Lossouarn, P., 983 (Oph.)
Lotka, A. J., 158 (Z.)
Louis & Trabaud, 413 (Misc.)
Low, G. C., 214, 567 (Hel.), 273 (Fev.), 753 (S.S.)
——, & Duncan, J. T., 63 (Bl.)
Lubinski, H., with Kollath, 888 (Chl.)
Lucchini, C., 351 (Dys.)
Ludlow, A. I., 686 (Am.)
Luengo, E., with de Buen, 58 (S.S.)
Luney, F. W., 950 (Hel.)
Lung, Y. Y. & Foster, J. H., (78) (Ent.)
Lynch, K. M., 6 (Der.), 140 (Z.), 687 (Am.)

M

McAlister, W., 295 (Mal.)
MacArthur, C. G., with Walker & Sweeney, 177 (Lep.)
McArthur, D. C., 399 (Misc.)
MacArthur, W. P., 155 (Z.) 617 (Mal.) 963 (Hel.)
McBrayer, R., 577 (Hel.)
MacCallan & Rasheed Bey, 455 (Oph.)
McCants, J. M., 872 (Lep.)
McCarrison, R., 82, 529 (Diet.), 633, 637 (Bb.), 843, 903 (Misc.)
MacConkey, with O'Brien, Sudmersen, Eagleton & Petrie, 696 (Dys.)
McConnell, R. E., 190 (Hel.)
McDaniel, F. L., 89 (Misc.), 869 (Lep.)
McDonald, E. J. C., with Fox & Young, 406, (Misc.)
McDonald, W. M., with Branch, 329 (Misc.)
Macfarlane, N. M., 388 (Misc.)
Macfie, J. W. S., 149 (Z.)
——, with Yorke, 783 (Z.)
McGrath, M. J., with Bolton, 35 (Dys.)
MacGregor, M. E., 300 (Mal.), 428, 781 (Z.), 502 (B.R.)
McIndoo, N. E. & Sievers, A. F., 782 (Z.)
McJunkin, F. A. & Charlton, A., 115 (Lab.)
Mackay, J. G., 520 (Lep.)
McKendrick, A. G., 708 (Rab.)
Mackenzie, J., 155 (Z.)
Mackenzie, M. D., 291 (Mal.)
Mackie, F. P., 69 (Pl.), 304 (Misc.)
——, with Das Gupta, B. M. & Swaminath, C. S., 246 (K. A.)
McLean, A. J., with Lamson, Gardner, Gustafson, Maire & Wells, 411 (Misc.)
Macmillan, R. J. A., 65 (Bl.)
McMullen, J., 460 (Oph.)
MacRae, D. M., 602 (Mal.)
McVail, J. B., with Chopra, 410 (Misc.)
Madras, 825 (Lab.)
Maës, E., 545 (Hel.), 912 (Misc.)
de Magalhaes, O., 621 (Der.)
——, & Neves, A., 5 (Der.)
de Magalhães, P. S., 15 (Der.)
Maggiore, S., 20 (Am.)
Magnani, G. & Morandi, S., 645 (Und.)
Mahmoud Zaky, 457 (Oph.)
Mail, L. C., 974 (Hel.)
Maire, E. D., with Lamson, Gardner, Gustafson, McLean & Wells, 411 (Misc.)
Maire, G. L. E., with Borel, 595 (Mal.)
Maitra, G. C., 39 (Dys.)
——, & Basu, J. B., 887 (Chl.)
——, with Megaw, 688 (Dys.)
Maitra, J. N., 716 (K.A.)
Makai, E., 217 (Hel.)
Makalintal, A., with Guerrero, Sison, Villaseñor, Rosal & Ocampo, 535 (Hel.)
Malaria-Commissie voor Noordholland, 606 (Mal.)
Male, A., 811 (Lab.)
Mallardi, M., 253 (K.A.)

Mallia, W. M., with Sutton, 15 (Der.)
Malone, R. H., 128, 814, 817 (Lab.), 464 (Misc.)
——, with Taylor, 866 (Lep.)
Mandal, U. N. (18) (Der.)
Mangin, 727 (K.A.)
Manifold, J. A., 776 (Z.)
Manouelian, Y. & Viala, J., 709 (Rab.)
Manoukhin, I. I., 298 (Mal.)
Manoussakis, with Zoeller, 982 (Oph.)
Manson-Bahr, P., 11 (Der)., 22 (Am.), 603 (Mal.), 680 (B.R.), 705 (Sp.), 823 (Lab.)
——, with Duncan, 488 (Misc.)
——, & Gill, G. B., 473 (Misc.)
Mansoor, R., 881 (Pl.)
Manteufel, P., 267 (R.F.)
Maples, E. E., 515 (Lep.)
Maplestone, P. A., 195, 967 (Hel.)
Marchand, L., 193 (Hel.)
Marchoux, E., 186 (Lep.)
Marcialis, G., 612 (Mal.)
Marich, F. R., Sultana, A. & Mifsud, V. J., 652 (Und.)
Marinesco, G. & Draganescu, S., 301, (618), (Mal.)
Marjoribanks, R. M. & Le Sueur, E. J. O., 949 (Hel.)
Marquez & Soria, 977 (Oph.)
Marshall, C. H. & Ram, A., 67 (Pl.)
Marshall, E. R., 175 (Lep.)
Martel, R., Renault, J., Cesari, E. & Lévy, P. P., 645 (Und.)
Martin, G., 50 (S.S.)
——, with Balfour, van Campenhout & Bagshawe, 498 (B.R.)
Martin with Dekester, 335, 404 (Misc.), 626 (Der.)
Martin, with Fraissinet, 91 (Misc.)
Martinaud, G., 568 (Hel.)
Martinelli, G., with Viviani, 601 (Mal.)
Martinez Briceño, R., 966 (Hel.)
Martini, E. (160) (Z.), (618) (Mal.)
Marulanda, A. E. (18) (Der.)
Marzinowsky, E. I. & Schourenkoff, A. I., 726 (K.A.)
——, Schukow & Ssutschkowa, 596 (Mal.)
Mashita, S., 450 (Chl.)
Mason, E. C. & Sandford, A. H., 813 (Lab.)
Matheson, F., 955 (Hel.)
Mathis, C., 306 (Misc.)
Matsubara, K., 216, 571 (Hel.)
Matsumoto, S. & Adachi, Y., 742 (Fev.)
Mattei, C., 28 (Am.)
Mattlet, G., 919 (Misc.)
Maury, E. & Pélissier, R., 537 (Hel.)
Maxcy, K. F. & Coogle, C. P., 293 (Mal.)
——, & Havens, L. C., 662 (Fev.)
Maxwell, J. P., 474 (Misc.)
Maxwell. J. L., 909 (*bis*) (Misc.)
May, P 934 (Hel.)
Mayer, M., 589, 1002 (B.R.)
Mazny Bey, 458 (Oph.)
Mazumdar, D. C., 728 (K.A.)
Mazza, S., 425, 776 (Z.), 521 (Lep.)
Medical Research Council, 501 (B.R.), 802 (Syph.)
——, Bacteriological Committee, 585 (B.R.)
Megaw, J. W. D., 107, 661 (Fev.) 631 (Bb.), 666 (Misc.)
——, & Bhattacharjee, S. P., 638 (Bb.)
——, & Maitra, G. C., 688 (Dys.)
Mège, with Boinet, 96 (Bb.)
Meggitt, F. J., 948 (Hel.)
Meirelles, E., 176 (Lep.)
Meissner, G., 887 (Chl.)
Meleney, H. E., 548, 945, 946 (Hel.)
——, & Faust, E. C., 201, 202 (Hel.)
——, & Wu, H., 945 (Hel.)
de Mello, F., 736 (*bis*) (R.F.)
Mello, U., 32 (Am.)
Melnotte, P., 76 (Ent.)
——, with Dekester, 704 (Dys.)
Mendel, L, B., with Osborne, with the co-operation of Cannon, 79 (Diet,)
Mendelson, R. W., 12, 625 (Der.)
Mendoza-Guazon, M. P., 202 (Hel.), 404 (Misc.)
Mengert-Presser, H., 89 (Misc.), 550 (Hel.)
Menk, W., 29 (Am.)
Menon, V. K. N., with Elwes & Ramakrishnan, 716 (K.A.)
Mense, C., 417 (Misc.), 498, 589 (B.R.)
Meo-Colombo, I., 611 (Mal.)
Meslin, 305 (Misc.)
Messinger, K., 791 (Z.)
Metalnikov, S. & Toumanoff, K., (189) (Lep.)
Metcalfe, A. J., 438 (Z.), 469, 897 (Misc.)
Meyer, O., with Nassau, 99 (Sc.)
Meyerhoff, 457 (Oph.)
Mhaskar, K. S., 534, 578 (Hel.)
——, with Caius, 218, 230 (Hel.)
——, & Kendrick, J. F., 227, 233 (Hel.)
Michel, P., with Mouriquand & Rochaix, 81 (Diet.)
Mifsud, V. J., with Marich & Sultana, 652 (Und.)
Mignoli, A., 759 (S.S.)
Miguez, C., 427 (Z.)
Mikhailof, A. (714) (Rab.)
Milinska, Z., with Anigstein, 397 (Misc.)
Millard, R. J., 507 (Lep.)
Miller, F. R. L., 911 (Misc.)
Miller, F. A., 228 (Hel.)
Millien, C., 805 (Bl.)
Millous, P. L. E., with Dong-Ngoc-Dieu, 8 (Der.), 450 (Chl.)
Mills, L., 456 (Oph.), 684 (Am.)

Mills, R. G., 206, 553, 950 (Hel.)
Milton, F., 159 (Z.)
Ministry of Health, 892 (Misc.)
Mironesco, M., 611 (Mal.)
Mitra, G. C., with Lloyd & Muir, 185, 866 (Lep.)
Miura, S., 97 (Bb.)
Miyagawa, Y., 930 (Hel.)
Miyairi, K., 539 (Hel.)
Miyashita, K., 949 (Hel.)
Molloy, D. M., 194 (Hel.)
Monges, J., 25 (Am.)
Monrad-Krohn, G. H., 512 (Lep.)
Monroe, W. M., with Connor, 141 (Z.)
Monserrat, C., 474 (Misc.)
Montagnani, M., 102 (Und.)
Montana, 157 (Z.)
Montel, M. L. R., 895 (Misc.)
——. Trân Van An & Dang Van Cúóng, 470 (Misc.)
Montenegro, J., 14 (Der.), 259, 725, 726 (K.A.)
Montpellier, J., & Béraud, M., 15 (Der.)
Moore, D., 937 (Hel.)
Moore, J. E., with Woods, 981 (Oph.)
Moore, W., with Robertson, 64 (Bl.)
Mooro, A. W., with Dolbey, 465 (Misc.), 988 (Tb.)
Mooser, H., 742 (Fev.)
Mora, C. F., 237 (Hel.)
Moral, with Trujillo, 623 (Der.)
Morales Villazon, N., 884 (Pl.)
Morandi, S., with Magnani, 645 (Und.)
Moratti, N., with Bezzi, 273 (Fev.)
Morax, V., 976 (Oph.)
Morenas, L., 195 (Hel.)
Morenon, J., with Sédan, 979 (Oph.)
Morev, with Wologin, 605 (Mal.)
Morgenroth, J., & Freund, R. (384), 757, (S.S.)
Mori, S., 976 (Oph.)
Morin, J., 860 (Lep.)
Morishita, K. O. R., 560 (Hel.)
Morisseau, 522 (Lep.)
Morris, L. M., 302 (Mal.), 659 (Fev.)
Mortiaux, C., 914 (Misc.)
——, with van Nitsen, 610 (Mal.)
Moschkowski, S., 116 (Lab.)
Moss, K. N., 491 (Misc.)
Moss, O. W., with Watkins, 572 (Hel.)
Motta, L. C., 571 (Hel.)
Moubarak, E. S. Y. E., with Cantlie, 603 (Mal.).
Mouillac, 466 (Misc.)
Moulinier, R., 346 (Am.)
Mouriquand, G., Rochaix, A., & Michel, P., 81 (Diet.)
Muench, H., 487 (Misc.)
Mühlens, P., 612 (Mal.)
——, & Kirschbaum, W., 613 (Mal.)
Muijzert, P. C., 61 (S.S.)
Muir, E., 171, 509, 510, 514, 870 (Lep.)
——, assisted by Landeman, E., Roy, T. N., & Santra, I., 179 (Lep.)
——, with Lloyd & Mitra, 185, 866, (Lep.)
Mukherjee, H. N., 724 (K. A.)
Mukherjee, P. B. (336) (Misc.)
Mukerji, B. K., 469 (Misc.)
Mukerji, A. K., with Bose, 488 (Misc.)
Mukerji, S. K., 886 (Chl.), 982 (Oph.)
Mulders, J., with Doorenbos, 354 (Dys.)
Muller, H. J., 493 (Misc.)
Müller, H. & Soekaton, R., 402 (Misc.)
Müller, O. & Justi, K., 462 (Misc.)
Münch, H., 60 (S.S.)
Munk, F. (61) (S.S.)
Murata, M., 639 (Bb.)
Muratoffa, A. P., with Kritchewsky, 386 (Bl).
Murphy, T. W., with Heydon, 840 (Misc.)
Murugesan, P., with Napier, 722 (K.A.)
Musgrave, W. E., (160) (Z.)
Muto, M., with Kuwabara, 197 (Hel.)
——, with Kuwahara, 541 (Hel.)
Mylrea, C. S. G., 159 (Z.)

N

Nagai, S., with Yamaguchi, Unno & Ochiai, 450 (Chl.)
Nagamine, M., with Saito & Hiyama, 932 (Hel.)
Nagashima, M., with Nomura, 73 (Chl.)
Nagayo, M., 97 (Bb.)
Nakadate, K., (75) (Chl.)
Nakagawa, K., 537 (Hel.)
——, & Suzuki, S., 537 (Hel.)
Nakamoto, H., with Suyeyasu, 550 (Hel.)
Nakanishi, T., with Ohomori, Ohhashi, Hara & Ohta, 632 (Bb.)
Nanavutty, S. H., 950 (Hel.)
Nand Lal, 120 (Lab.)
Napier, L. E., 255, 256, 722, (*bis*) (K.A.), 816 (Lab.)
——, & Das Gupta, B. M., 252 (K.A.)
——, & Murugesan, P., 722 (K.A.)
Nassau, E. & Meyer, O., 99 (Sc.)
National Medical Journal of China, 540 (Hel.)
Nattan-Larrier, L., 648 (Und.)
——, & Laigret, J., 313 (Misc.)
Nauck, E. G., 900 (Misc.)
Navarro, R., with Gomez, 405 (Misc.)
Navarro-Martin, A., with Fourneau & Tréfouel, M. & Mme., 322 (Misc.)
Neatby, E. A., & Neatby, T. M., 163 (B.R.)
Neilson, H. R., 67 (Pl.)
Neiva, A., & Pinto, C. (160) (Z.)
Neligan, A. R., 343 (Am.)

Nénon, J., with Argaud, 13 (Der.)
Neto, V. B., 18 (Der.)
Neve, E. F., 207 (Hel.), 326 (Misc.) 909 (Misc.)
Neves, A., 4 (Der.)
— —, with de Magalhaes, 5 (Der.)
Neville, D. W., 641 (Sc.)
New Hebrides, 305 (Misc.)
New South Wales, 507 (Lep.)
Newstead, R., (161), 438 (Z.)
Nicati, W., 979 (Oph.)
Niccolini, P. M., 415 (Misc.)
Nicholls, A. G., 436 (Z.)
Nicholls, L., 243 (B.R.), (714) (Rab.), 827 (Lab.)
— —, with Docherty, 194 (Hel.)
— —, with Pestonjee & Felix, 870 (Lep.)
Nicolas, F., 795 (Ys.)
Nicolau, S., with Levaditi, 382 (S.S.), 672 (Misc.)
——, with ——, & Schoen, 708 (Rab.)
Nicoll, W., 530 (Hel.)
Nicolle, C., 979 (Oph.)
——, & Conseil, E., 267 (R.F.)
Nicholson, M. A., 905 (Misc.)
Nigeria, Medical Research Inst., 65 (Bl.), 507 (Lep.), 804 (Bl.), 831 (Lab.)
Nikolski, V. V., 779 (Z.)
Nishigori, M., 938 (Hel.)
Nishiwo, T., 962 (Hel.)
van Nitsen, R., 9 (Der.), 797 (Ys.) 919 (Misc.)
——, & Mortiaux, C., 610 (Mal.)
Nitzulescu, V., 434 (Z.), 808 (Lab.)
Nobechi, K., 75 (Chl.)
——, & Ishikawa, T., 75 (Chl.)
Noc, F., (161) (Z.), 262 (R.F.)
Noël, P., 16 (*bis*) (Der.), 183, 186 (Lep.)
Noguchi, H., 109 (Fev.), 744, 745 (Y.F.)
Nogue, M., 799 (Syph.)
Nogue, Mme. M., 848 (B.R.)
Nogue & Boulay, 204 (Hel.)
—— & Leger, M., 30 (Am.)
——, with Leger, 3 (Der.)
——, & Lhuerre, H., 7 (Der.)
Nöller, W., 809 (Lab.)
Nomura, T., Hokama, G., & Harada, S., 75 (Chl.)
— —, & Nagashima, M., 73 (Chl.)
de Nooy, J. A., 577 (Hel.)
Normet, 342 (Am.)
——, & Salle, 19 (Am.)
Novis, (238) (Hel.)
Nuttall, G. H. F., 792 (Z.)
Nyberg, C., 218 (Hel.)

O

Oba, S., 276, 277 (Jaun.)
——, Katayama, T., & Suri, K., 276 (Jaun.)
— —,——, & Washimi, K., 277 (Jaun.
Oba, S., with Zuelzer, 262 (R.F.)
Oberlé & Vialatte, C., 594 (Mal.)
O'Brien, Sudmersen, Eagleton, MacConkey & Petrie, 696 (Dys.)
Ocampo, A., with Guerrero, Sison, Makalintal, Villasenor & Rosal, 535 (Hel.)
Ochiai, S., with Yamaguchi, Nagai & Unno, 450 (Chl.)
Oda, T., 743 (Jaun.)
Oeconomou & Petzetakis, 259 (K.A.)
d'Oelsnitz, Degroote, G., & Pin, F., 650 (Und.)
——, & Liotard, 649 (Und.)
Ogata, N., with Busson, 693 (Dys.)
Ogata, S., with Yoshida, 551 (Hel.)
Ogata, T., Kawakita, S., Suzuki, S., & Kagoshima, S., 98 (Bb.)
——, ——, Kagoshina, S., Suzuki, S., & Oka, H., 632 (Bb.)
Ogilvie, D. C., 872 (Lep.)
Ohhashi, Y., with Ohomori, Nakanishi, Hara & Ohta, 632 (Bb.)
Ohi, T., 41 (Dys.)
Ohmori, C., with Kawamura & Tanaka, 948 (Hel.)
Oho, O., 1 (Der.)
Ohomori, K., 632 (Bb.)
——, Ohhashi, Y., Nakanishi, T., Hara, M., & Ohta, T., 632 (Bb.)
Ohoto, O., 69 (Pl.)
Ohta, T., with Ohomori, Ohhashi, Nakanishi & Hara, 632 (Bb.)
Ojero, J. P., Redondo, A., Blanco, J., Delgado, E., Cid, R. F., & Palanca, 594 (Mal.)
Oka, H., with Ogata, Kawakita, Kagoshima & Suzuki, 632 (Bb.)
Okuda, O., with Watanabe & Akamatsu, 890 (Chl.)
Okujima, A., 570 (Hel.)
O'Leary, P. A., 741 (Fev.)
Oliver, T. H., 341 (Am.)
Oliver, T., 175 (Lep.)
Olivier, J., 729 (R.F.)
Omar, M., with Dolbey, 904 (Misc.)
O'Neill, V. F., with Cilento, 954 (Hel.)
Ong Kie Hong, H. F., 794 (Ys.)
Ono, K., 37 (Dys.)
Onorato, R., 740 (Fev.)
Orenstein, A. J., 239 (Tb.), 324 (Misc.)
Orpen, L. J. J., 102, 654 (Und.)
Ortiz, P. N., 182 (Lep.)
Osborne, T. B., & Mendel, L. B., with the co-operation of Cannon, H. C., 79 (Diet.)
Ota, M., 676 (Misc.)
——, & Langeron, M., 619 (Der.)
Otten, L., 440, 878 (Pl.)
Ouchakoff, V. G., 714 (Rab.)
Oxford, E., 1005 (B.R.)
Oyama, S., 74 (Chl.)

P

di Pace, I., 293 (Mal.)
Pacheco, G., with da Cunha, 135, (160) (Z.)
Pacheco Luna, F., 977 (Oph.)
Padua, R. G., 287 (Mal.), 701 (Dys.)
Page, B. W., 526 (Pel.)
Pagenstecher, G. A., 624 (Der.)
Paillot, A., 136, 156 (Z.)
Pal, R. D., 884 (Pl.)
Palanca, with Ojero, Redondo, Blanco, Delgado & Cid, 594 (Mal.)
Pallary, P., (161) (Z.)
Palmer, F. J., 885 (Chl.)
Pampana, E. J., 625 (Der.)
Panayotatou, A., 259 (K.A.), 337, 346, 683 (*bis*) 687 (Am.), 406 (Misc.)
——, with Ralli, 27 (Am.)
Panja, G., 628, 630 (Der.)
Papacostas, G., with Rochaix, 713 (Rab.)
Papamarku, P., & Steenhuizen, S., 34 (Dys.)
Pardo, L., 141 (Z.)
Pardo-Castello, V., 8 (Der.)
——, & Dominguez, M. M., 623 (Der.)
Parisi, E., with Reitani, 267 (R.F.)
Parker, R. R., with Spencer, 664 (Fev.)
——, ——, & Francis, E., 791 (Z.)
Parr, L. W., 264 (R.F.)
Parra, R. F., & Santos, J. E., 515 (Lep.)
Parrot, L., (387) (Bl.)
— —, with Senevet (161 (Z.)
——, with Sergent, Edm., & Donatien, 492 (Misc.)
— —, with ——, & Foley, 978 (Oph.)
Paterni, L., 807 (Bl.)
Paterson, D., with Hutchinson, 523 (Pel.)
Paton, D. D., 978 (Oph.)
Patterson, J. W., 882 (Pl.)
Patterson, S. W., & Williams, F. E., 208, 554 (Hel.)
Patton, W. S., 147 *bis*, 153 (Z.)
Pavlovsky, E. N., & Stein, A. K., 439, 789 (Z.)
Pawlowsky, E., & Stein, A. K., 439 (Z.)
Payne, F. K., 225, *bis* (Hel.)
Payne, G. C., Cort, W. W., & Riley, W. A., 220, 224 (Hel.)
——, with ——, —— & Hill, 223 (Hel.)
——, with ——, Payne, G. C., Cort, Riley, Stoll & Hill, 220 (Hel.)
Pearce, L., with Brown, 378 (S.S.)
Pederson, J., 204 (Hel.)
Pélissier, R., with Maury, 537 (Hel.)
Penris, P. W. L., 794 (Ys.)
Perard, 345 (Am.)
Pereira, M., 593 (Mal.)
Perekropow, G., 608 (Mal.)
Perkins, G. A., & Cruz, A. O., 517 (Lep.)
Peschić, S., 99 (Sc.)
Pesme, with Worms, 983 (Oph.)
Pessôa, S. B., 229, 973 (Hel.)
Pestonjee, R., Nicholls, L., & Felix, J. E., 870 (Lep.)
Peter, L. C., 983 (Oph.)
Peterson, R. A., 458 (Oph.)
Petrie, A. A. W., 704 (Dys.)
——, with O'Brien, Sudmersen, Eagleton & MacConkey, 696 (Dys.)
Petrie, G. F., & Todd, R. E., 875 (Pl.)
Petrovanu, G., 889 (*bis*) (Chl.)
Pettit, A., 275 (Jaun.)
—, & Sicé, A., 974 (Hel.)
Pettit, R. H., 788 (Z.)
Petzetakis, 22, 26, 338 *bis*, 342, 683 (Am.), 944 (Hel.)
——, with Oeconomou, 259 (K.A.)
Peyre, E. L., 583 (Hel.)
Peyre, E., with Labernadie, 272 (R.F.)
Peyrot, J., 215 (Hel.)
de Pfeffel, with Guinon & Lamy, 69 (Pl.)
Pfister, E., 200 *bis* (Hel.)
Phease, R. N., 204 (Hel.)
Phelps, B. M., & Hu, C. H., 915 (Misc.)
Phipps, F., 183 (Lep.)
Phipson, E. S., (418), 472, 494 (Misc.)
Phisalix, 425 (Z.)
Photakis, B. A., 611 (Mal.)
Piccininni, F., & Scaglione, G., 912 (Misc.)
Piccoli, G., 21, 346 (Am.)
Picout-Laforest, A., 13 (Der.)
——, with Foley, 438 (Z.)
Pierret, R., 901 (Misc.)
Piga, 913 (Misc.)
Pijper, A., 77 (Ent.), 675 (Misc.)
Pillat, A., 980 (Oph.)
Pin, F., with d'Oelsnitz & Degroote, 650 (Und.)
Pineda, E. V., 865 (Lep.)
Pinto, C., 134, 145, (161) *bis* (Z.)
— —, with Neiva, (160) (Z.)
Pirot, R., with Sigalas, 530 (Hel.)
Pisa, A. de T., with Guimaraes & Lima, 34 (Dys.)
Pisani, S., 648 (Und.)
Pissavy, A., Bréger & Chabrun, 23 (Am.)
Pittaluga, 923 (Misc.)
Plehn, 296 (Mal.)
Podjapolskaja, V. P., 964 (Hel.)
Pomaret, M., with Sézary, 265 (R.F.)
Pomme & Abdel-Kader-Sabbach, 205 (Hel.)
Ponoschina, V. G., 773 (Z.)
Pons, R., 348 (Dys.), 471 (Misc.), 734, 739 (R.F.)
——, with Bernard, 441 (Pl.)
——, with ——, & Bablet, 931 (Hel.)
——, with Lalung-Bonnaire, 476 (Misc.

Ponselle, A., 383 (S.S.), 424, 774 (Z.)
Pontano, T., (618) (Mal.)
Pope, W. J., 480 (Misc.)
Popescu, C., 889 (Chl.)
Popoff, P., 485 (Misc.)
Porter, A., 209 (Hel.)
Porter, F. J. W., 951 (Hel.)
Portley, K., (238) (Hel.)
Poucel, J., & Carrieu, M. F., 567 (Hel.)
Powell, A., 865 (Lep.)
Pozerski, E., 353, 692 (Dys.)
Pratt-Johnson, J., 881 (Pl.)
Prentice, G., 325 (Misc.)
Presti-Seminerio, F. L., 913 (Misc.)
Pringault, E., & Vigne, P., 522 (Lep.)
——, with ——, 258 (K.A.),
Probey, T. F., with Lake, 61 (S.S.)
Proceedings of the Royal Society of Medicine, 361 (Sp.)
Procter, R. A. W., 912 (Misc.)
Public Health Reports, 175 (Lep.), 442 (Pl.)
Pugh, J., 795 (Ys.)
Puntoni, V., 711 *bis* (Rab.), 816 (Lab.)
Pupo, J. de A., 258 (K.A.)
Pusey, W. A., 17 (Der.)
Puxeddu, E., 874 (Lep.)

Q

de Quervain, F., 585 (B.R.)
Quesada, F., 684 (Am.)
Quick, A. J., 131 (Lab.)
Quirk, E. J. J., 627 (Der.)

R

Rabello, E., 328 (Misc.)
Rachet, with Bensaude & Cain, 686 (Am.)
Radsma, W., 396 (Misc.)
——, & Goelam, 399 (Misc.)
Ralli, A., & Panayotatou, 27 (Am.)
Ram, A., with Marshall, 67 (Pl.)
Ram, B., 437 (Z.)
Ramakrishnan, P. S., with Elwes & Menon, 716 (K.A.)
Ramanathan, S., 491 (Misc.)
Ramsay, G. C., 235, 968 (Hel.), 417 (Misc.)
Rand, R. F., 300 (Mal.), (387) (Bl.)
Randall, A., 626 (Der.)
——, Small, J. C., & Belk, W. P., 10 (Der.)
Randoin, L., & Simonnet, H., 98 (Bb.)
Rao, B. K. N., 981 (Oph.)
Raphael, A., with Cotoni & Truche, 928 (B.R.)
Rasheed Bey with MacCallan, 455 (Oph.)
Raybaud, J., with d'Astros & Giraud, 253 (K.A.)
Razetti, L., 21 (Am.), 911 (Misc.)
Read, B. E., 517 (Lep.)
Redlich, E., 615 (Mal.)
Redondo, A., with Ojero, Blanco, Delgado, Cid & Palanca, 594 (Mal.)
Reenstierna, J., 70 (Pl.), (418) (Misc.)
Rees W., (71) (Pl.)
Reeve,, E. F., & Watson, G. A., 35 (Dys.)
von Rehren, W., 702 (Dys.)
Reich, W. W., 774 (Z.)
Reichenow, E., 54 (S.S.), 135 (Z.)
Reid, C. B. B., 798 (Ys.)
Reid, G. A., 334 (Misc.)
Reiner, L., with v. Fenyvessy, 775 (Z.)
Reiss, F., 6 (Der.)
Reitani, U., & Parisi, E., 267 (R.F.)
Reiter, J., 217 (Hel.)
Remlinger, P., 13, 626 (Der.), 85, 335, 469, 488 (Misc.), 710, 711 (Rab.), 987 (Tb.)
——, & Bel, P., 712 (Rab.)
——, Leger, M., & Teppaz, 85 (Misc.)
Renaud, H. P. J., 70 (Pl.)
Renault, J., with Martel, Cesari & Lévy, 645 (Und.)
Rendón, G., 745 (Y.F.)
Reti, A., 237 (Hel.)
Reynaud, G., & Léger, M., 197 (Hel.)
Reynolds, B. D., with Bull, 429 (Z.)
Rhode, J., 137 (Z.)
Ribolla, R., 839 (Misc.)
Ribón, D. V., 924 (Misc.)
Ricci, O., 299 (Mal.)
Richards, R. E., with Cilento, 952 (Hel.)
Ricou, M., (336) (Misc.)
Rigby, H. M., (238) (Hel.)
Riley, W. A., 948 (Hel.)
——, with Cort, Payne & Hill, 223 (Hel.)
——, with Payne & Cort, 220, 224 (Hel.)
Rinaldi, M., with Gaminara, 560 (Hel.)
Rippon, T. S., 494 (Misc.)
Risquez, J. R., 271 (R. F.)
Rivalier, E., with Babonneix, (189) (Lep.)
Rivet, L., 145 (Z.)
R. Med. Veracruzana, 745 (Y.F.)
Robert, L., 85 (Misc.)
Roberts, W. H., 982 (Oph.)
Robertson, A., 31 (Am.), (161) (Z.)
Robertson, G. E., & Moore, W., 64 (Bl.)
Robertson, H. McG., 67 (Pl.)
Robertson, M. O., 572 (Hel.)
Robineau, M., 515 (Lep.)
Robinski, 689 (Dys.)
Rochaix, A., 710, (714) (Rab.)

Rochaix, A., with Courmont, 693 (Dys.)
——, with Mouriquand & Michel, 81 (Diet.)
——, & Papacostas, G., 713 (Rab.)
Rockefeller Foundation, 764 (B.R.)
Rodenhuis, Y., 1,000 (B.R.)
Rodenwaldt, E., (94) (Misc), 145, 431 (Z.)
Rodet, A., 710 (Rab.)
Rodhain, J., 270 (R.F.), 427 (Z.)
Rodinò, N., (18) (Der.)
Rodriguez Arjona, V., (630) (Der.)
Rodriguez Rivero, P. D., 955 (Hel.)
Rodriguez, J., & Eubanas, F., 520 (Lep.)
Rodriguez, R., with De Buen & Casa, 732 (R.F.)
Roegholt, M. N., 894 (Misc.)
Rogers, L., 172, 509 (Lep.), 994 (Tb.), 998 (B.R.)
Rojas, H. M., 622 (Der.)
Romera y Domingo, J. A., 594 (Mal.)
Rook, A. F., with Whittingham, 433 (Z.), 660 (Und.)
de Rook, H., 286 (Mal.)
Root, F. M., 152 (Z.)
——, with Bull, 143 (Z.)
Rosal, I., with Guerrero, Sison, Makalintal, Villaseñor, & Ocampo, 535 (Hel.)
Rose, F. G., 392 (Misc.), 565, 566 (Hel.)
——, & Chow, J. E., 483 (Misc.)
Rosenberger, G., (133) (Lab.)
Rosenfeld, A. S., 707 (Sp.)
Ross, G. A. P., 579 (Hel.)
Ross, I. C., 14 (Der.)
Ross, R., 297, 616 (Mal.) (418), 481 (Misc.)
Roubaud, E., 141, (161) (Z.)
Rouillard, J., 687 (Am.)
Roussy, 301 (Mal.)
Roux, F., 28 (Am.)
Row, R., 741 (Fev.), 997 (Tb.)
Roxas, M. L., & Collado, E. G., 527 (Diet.)
Roy, T. N., with Muir, Landeman & Santra, 179 (Lep.)
Royo Villanova, R., 594 (Mal.)
Rubaschkin, 605, 617 (Mal.)
Rudolf, G. de M., 616 (Mal.)
Ruppert, F., 59 (S.S.)
Russell, A. J. H., Ayyar, A., & Ubhaya, 729 (R.F.)
Russo, 156 (Z.)
Rutowitcz, B. L., 174 (Lep.)
de Ruyter, J., 459 (Oph.)

S

Sabouraud, R., 620 (Der.)
Sabrazès, 301 (Mal.)
Sacchetto, I., 638 (Bb.)
Sacquepée, E. E. J., 781 (Z.)
Sadek, M. T., 456 (Oph.)
Sáenz, C. F., 237 (Hel.)
Sagel, 734 (R. F.)
Saito, T., 153 (Z.)
——, Hiyama, T., & Nagamine, M., 932 (Hel.)
Sakamoto, T., with Tsurumi, Hara, Imai & Awoki, 68 (Pl.)
Sakauchi, E., 351 (Dys.)
Salle, with Bourgin & Decrop, 507 (Lep.)
——, with Decrop, 800 (Syph.)
——, with Normet, 19 (Am.)
Salm, A. J., 365 (Ys.)
Saloz, with Cottin, (238) (Hel.)
Samson, J. G., & Limkako, G., 519 (Lep.)
Sanarelli, G., 72 (*bis*), 447, 890 (Chl.)
Sanchez, A., with Hill, 949 (Hel.)
Sandford, A. H., with Mason, 813 (Lab.)
Sandground, J. H., 574 (Hel.)
Sandilands, J. E., 879 (Pl.)
Sano, T., 450 (Chl.)
van Sant, H. M., with Young, 251 (K.A.)
Santos, F. O., 321 (Misc.)
Santos, J. E., with Parra, 515 (Lep.)
Santra, I., with Muir, Landeman & Roy, 179 (Lep.)
Sarkar, S. L., 91 (Misc.)
——, & De, A. B., 718 (K.A.)
Sarnelli, T., 467 (Misc.)
Sarraut, A., 873 (Lep.)
Satke, O., with Felsenreich, 359 (Dys.)
Sawyer, W. A., & Sweet, W. C., 581 (Hel.)
——, ——, & Shaw, A. E., 225 (Hel.)
Sazerac, R., & Vaurs, R., 924 (Misc.)
Scaglione, G., with Piccininni, 912 (Misc.)
Scala, A., 633 (Bb.)
Scalas, L., 340 (Am.)
Scarpellini, A., 889 (Chl.)
Schaeffer, H., 90 (Misc.)
Schamberg, J. F., & Kolmer, J. A., 8 (Der.)
Scharff, J. W., with Hoops, 999 (B.R.)
Schilder, P., 615 (Mal.)
Schilling, V., 498 (B.R.)
Schinz, H. R., 958 (Hel.)
Schlesinger, M. J., with Wolbach, 664 (Fev.)
Schmitter, F., 6 (Der.)
Schneider, H., 554 (Hel.)
Schneider, J., 845 (Misc.)
Schneider, O., 404 (Misc.)
Schöbl, O., 516 (Lep.)
Schoen, R., with Levaditi & Nicolau, 708 (Rab.)
Schönfelder, T., 350 (Dys.)

Schourenkoff, A. I., with Marzinowsky, 726 (K.A.)
Schousboé, 978 (Oph.)
Schüffner, W., & Kuenen, W. A., 274 (Jaun.)
Schukow, with Marzinowsky & Ssutschkowa, 596 (Mal.)
Schwartz, 616 (Mal.)
Schwartz, B., with Leach, C. N., & Leach, F. D., with the Co-operation of Haughwout, 226 (Hel.)
Schwetz, J., 371 (S.S.)
Scott, D. S., 944 (Hel.)
Scott, G. B., 641 (Sc.)
Scott, H. H., 43, (45), 361 (Sp.), 551 (Hel.)
——, with Balfour, 504 (B.R.)
Scott, J. M., & Simon, C. E., 330 (Misc.)
Scott, R. E., & French, R. W., 111 (Lab.)
Scott, R. R., 188 (Lep.)
Scripture, E. W., (303) (Mal.)
Scully, F. J., with Greene, 42 (Dys.)
Sdrodowski, P., 652 (Und.)
——, & Lindtrop, H., 291 (Mal.)
Sedallian, P., with Jean, 644 (Und.)
Sédan, J., 981 (Oph.)
——, & Hermann, R., 979 (Oph.)
——, & Morenon, J., 979 (Oph.)
Sée, P., 649 (Und.)
Ségal, J., with David, 597 (Mal.)
Séguy, E., 243, 847 (B.R.)
Sei, S., 59 (S.S.)
——, with Giemsa, 490 (Misc.)
Seki, T., 348 (Dys.)
Sellards, A. W., 665 (Fev.)
——, & Theiller, M., 681 (Am).
Selwyn-Clarke, P. S., 991 (Tb.)
——, Le Fanu, G. H., & Ingram, A., 266 (R.F.)
Semerau, M., 689 (Dys.)
Sen, P. B., with Brahmachari & Das, 253 (K.A.)
——, with ——, Chaudhury & Das, 718 (K.A.)
Sen, R. T., with Shortt, 254 (K.A.)
— —, with ——, & Swaminath, 252 (K.A.)
Senevet, G., 113 (Lab.), 293 (Mal.)
——, & Dechaux, 560 (Hel.)
——, & Ebert, G., (161) (Z.)
—— [illegible] Parrot, L., (161) (Z.)
— —, & Witas, P., 139 (Z.)
de Sequeira Nazaré, F. X., (618) (Mal.)
Sergent, Edm., 308 (Misc.)
——, Foley, H., & Parrot, L., 978 (Oph.)
——, & Foot, K., 145 (Z.)
——, Parrot, L., & Donatien, A., 492 (Misc.)
——, with Sergent, Et., & Catanei, 139 (Z.), 289, 290 (Mal.).
Sergent, Et., & Gueidon, E., 725 (K.A.)
——, ——, Bouguet, A., & Catanei, A., 728 (K.A.)
——, & Sergent, Edm., 290 (Mal.).
——, ——, & Catanei, A., 139 (Z.), 289, 290 (Mal.).
——, & Triollet, R., 259 (K.A.)
Serrant, with Laignel-Lavastine, Boutet & Arbeit, 742 (Fev.)
Severiano de Magalhães, P., (18) (Der.)
Seyfarth, C., 837 (Misc.)
Sézary, A., & Pomaret, M., 265 (R.F.)
Sgrosso, 977 (Oph.)
Shanks, G., 304 (Misc.)
Sharp, N. A. D., 213, 940 (Hel.), 324 (Misc.)
Shattuck, G. C., 17 (Der.), 197, 212, 540, 583 (Hel.)
Shaw, A. E., with Sawyer & Sweet, 225 (Hel.)
Shawky, I., with Khalil, 41 (Dys.)
Shaw-Mackenzie, J. A., 511 (Lep.)
Shear, C. L., 7 (Der.)
Shelton, C. F., 894 (Misc.)
Shiga, K., 696 (Dys.)
— —, Kawamura, H., & Tsuchiya, K., 697 (Dys.)
Shillinger, J. E., with Hall, 583 (Hel.)
Shimazono, J., 640 (Bb.)
Shimomura, S., 949 (Hel.)
Shintake, T., 382 (S.S.)
Shortt, H. E., 242 (Z.), 595 (Mal.)
— —, & Sen, R. T., 254 (K.A.)
——, & Swaminath, C. S., 720 (K.A.)
——, ——, & Sen, R. T., 252 (K.A.)
Shousha, A. T., 449 (Chl.)
Sicé, A., 753 (S.S.)
——, with Pettit, 974 (Hel.)
Sienczewski, S., with Szymanowski, (714) (Rab.)
Sievers, A. F., with McIndoo, 782 (Z.)
Sigalas, R., & Pirot, R., 530 (Hel.)
Silva, F., 5 (Der.)
da Silva, G. P., 935 (Hel.)
Silverman, D. N., & Denis, W., 44 (Sp.)
Silverston, J. D., with Grant, (618) (Mal.)
Silvestri, S., 297 (Mal.)
Simon, C. E., 590 (B.R.)
——, with Scott, 330 (Misc.)
Simon, M., 359 (Dys.)
Simon, S. K., 339 (Am.)
Simonnet, H., with Randoin, 98 (Bb.)
Simmons, P., 147 (Z.)
Sinton, J. A., 139, 146, (161), (793) (Z.), 732 (R.F.)
——, & Baily, J. D., 601 (Mal.)
Sison, A. B. M., with Guerrero, Makalintal, Villaseñor, Rosal & Ocampo, 535 (Hel.)
Sitsen, A. E., 898 (Misc.)
Skinner, A. H., 946 (Hel.)

Slartscheff, M., 93 (Misc.)
Small, J. C., & Julianelle, L. A., 12 (Der.)
——, with Randall & Belk, 10 (Der.)
Smillie, W. G., 965 (Hel.)
Smith, D. V., 461, 980 (Oph.)
Smith, L. W., 391, 893 (Misc.)
Smith, N. F., 943 (Hel.)
Smith, S., 682 (Am.)
Smits, J. C. J. C., 473 (Misc.)
Smyly, H. J., & Young, C. W., 720 (K.A.)
Smyly, H. J., with Young & Brown, 720 (K.A.)
Snijders, E. P., 261 (R.F.)
——, & Straub, M., 906 (Misc.)
Sobernheim, G., 627 (Der.)
Sobhy Bey, M., 455 (Oph.)
Soekaton, R., with Müller, 402 (Misc.)
Soemadijono, with Kehrer, 234 (Hel.)
Solovief, P., with Brun, Broc, Burnet & Anderson, 7 (Der.)
Son, Y., 982 (Oph.)
Soparkar, M. B., 119 (Lab.)
Sorel, F., 318 (Misc.)
Soria with Marquez, 977 (Oph.)
Soto, J., 376 (S.S.), 938 (Hel.)
de Sousa, D. R., 658 (Fev.)
Sparapani, G. C., 935 (Hel.)
Spencer, H. A. (387) (Bl.)
Spencer, R. R., & Parker, R. R., 664 (Fev.)
——, with ——, & Francis, 791 (Z.)
Spittel, R. L., 327 (Misc.)
Ssutschkowa, with Marzinowsky & Schukow, 596 (Mal.)
Stannus, H. S., 300 (Mal.)
Stanton, A. T., 95 (Bb.), 833 (Lab.)
Stark, H. H., (161) (Z.), 459 (Oph.)
Steenhuizen, S., with Papamarku, 34 (Dys.)
van Steenis, P. B., 154 (Z.)
Stein, A. K., with Pavlovsky, 439, 789 (Z.)
——, with Pawlowsky, 439 (Z.)
Stekhoven, Jr., J. H., Schuurmans, & Stekhoven-Meyer, A. W. S., 970 (Hel.)
Stekhoven-Meyer, A. W. S., with Stekhoven, Jr., J. H. S., 970 (Hel.)
Stenhouse, H. M., 955 (Hel.)
Stephens, J. W. W., 596, 608 (Mal.)
— —, & Gordon, R. M., 609 (Mal.)
Steppuhn, O., Zeiss, H., & Brychonenko, S., 394 (Misc.)
Stendel, E., 842 (Misc.)
Stevenel, 470 (Misc.), 518 (Lep.)
Stevenson, A. C., 118 (Lab.)
Stevenson, W. D. H., & Kapadia, R. J., 882 (Hl.)
Stewart, H., 956 (Hel.)
Stewart, Q., 958 (Hel.)
Stibbe, 451 (Ent.)
Stiles, C. W., with Boeck, 422 (Z.)
St. John, J. H., with Bates, 496 (Misc.)
Stocker, C. J., 880 (Pl.)
——, & Graham, G. F., 880 (Pl.)
Stoll, N. R., 221, 222 (Hel.)
Storch, R. B., 287 (Mal.)
Straub, M., with Snijders, 906 (Misc.)
Strickland, C., 285, 607 (Mal.)
Strugnell, L. F., 945 (Hel.)
Struthers, E. B., 719 (K.A.)
——, & Ch'i Chang Ch'un, 717 (K.A.)
Stuart, G., 803 (Syph.)
Stuckey, E. J., 459, 976 (Oph.)
Stuhlmann, W., 611 (Mal.)
Stunkard, H. W., 195 (Hel.)
Style, F. W., 786 (Z.)
Sudmersen, with O'Brien, Eagleton, MacConkey & Petrie, 696 (Dys.)
Suemori, S., 550 (Hel.)
Sueyasu, Y., 549 (Hel.)
Sugai, T., 177 (Lep.)
Suganuma, S., 566 (Hel.)
Suhatzeanou, C. St., & Théodorasco, C., 449 (Chl.)
Sullivan, K. C., 782 (Z.)
Sultana, A., with Marich & Mifsud, 652 (Und.)
Sumi, K., with Oba & Katayama, 276 (Jaun.)
Sumiwo, S., 926 (Misc.)
Susu, B., with Archibald, 775 (Z.)
Sütterlin, T., with Härle & Zeiss, 192 (Hel.)
Sutton, L. A., & Mallia, W. M., 15 (Der.)
Suyeyasu, Y., & Nakamoto, H., 550 (Hel.)
Suzuki, S., 538, 936 (Hel.)
——, with Kawakiya & Kagoshima, 98 (Bb.)
——, with Nakagawa, 537 (Hel.)
——, with Ogata, Kawakita & Kagoshima, 98 (Eb.)
——, with ——, ——, ——, & Oka, 632 (Bb.)
Suzuki, T., 75) (Chl.), 96 (Bb.)
——, with Tokuye, K., & Hatai, K., 692 (Dys.)
Swaminath, C. S., with Mackie & Das Gupta, 246 (K.A.)
——, with Shortt, 720 (K.A.)
——, with ——, & Sen, 252 (K.A.)
Swarup, A., 915 (Misc.)
Sweeney, M. A., with Walker & McArthur, 177 (Lep.)
Sweet, W. C., 565, 932, 964 (Hel.)
——, with Sawyer, 581 (Hel.)
——, with ——, & Shaw, 225 (Hel.)
Swezy, O., 774 (Z.)
——, with Kofoid, (160), 773 (Z.), 688 (Am.)

Swynnerton, C. F. M., 61 (S.S.), 148, 149 (Z.)
Szymanowski, Z., & Sienczewski, S., (714) (Rab.)

T

Takano, R., 569, 570 (*bis*), 960 (Hel.)
——, with Yoshida, 218, 553 (Hel.)
Takeuchi, N., with Hayashi, 664, 927 (Fev.)
Talbot, R., 978 (Oph.)
Taliaferro, W. H., 423 (Z.)
——, & Becker, E. R. (793) (Z.)
——, with Hegner, 243 (B.R.)
——, & Huck, J. G., 926 (Misc.)
Tamalet, E. J. M. G., 840 (Misc.)
Tamiya, S., 184 (Lep.)
Tanabe, B., 206 (Hel.)
Tanabe, M., 723 (K.A.)
Tanaka, A., 355 (Dys.)
Tanaka, S., with Kawamura & Kazama, 947 (Hel.)
——, with ——, & Ohmori, 948 (Hel.)
Tanaka, T., 355 (Dys.)
Tanganyika Territory, 830 (Lab.)
Tanner, W. F., with Goldberger, 525 (Pel.)
——, with —— & Waring, 525 (Pel.)
Tanon, L., 67, 443 (Pl.)
——, & Cambessedès, 845 (Misc.)
—— & Jamot, 370 (Ys.)
Tascon, J. H., 658 (Fev.)
Tashiro, K., 558 (Hel.)
Tashiro, S., with Kachi, 532 *bis* (Hel.)
Tasker, D. G. C., with Cook, 572 (Hel.)
Taylor, J., 130 (Lab.)
——, & Chitre, G. D., 440 (Pl.)
—— & Douglas, A. R. J., 487 (Misc.)
—— & Malone, R. H., 866 (Lep.)
Tchang Kouo-Ngen, J., with Le Févre de Arric, 710 (Rab.)
Tcheschkoff, A. M., (714) (Rab.)
Tejera, H., with Castellani, 6 (Der.)
Templeton, W. L., (303) (Mal.)
Téodorasco, C., 84 (Misc.)
Teppaz, with Remlinger & Leger, 85 (Misc.)
Ter Poorten, F. H., 779 (Z.)
Terrien, F., 981 (Oph.)
Tewfik, M., 461 (Oph.)
Theiller, M., with Sellards, 681 (Am.)
Theodor, O., 438 (Z.)
Théodorasco, C., with Suhatzeanou, 449 (Chl.)
Thévenot, L., with Arloing, 712 (Rab.)
Thibierge, G., 629 (Der.)
van Thiel, P. H., 969 (Hel.)
Thiellé, T., 555 (Hel.)
Thira, T., 210 (Hel.)
Thiroux, A., 90 (Misc.), 579 (Hel.), 876 (Pl.)
Thomas, E., 211 (Hel.)
Thompson, J. C., 673 (Misc.)
Thompson, M. G., with Blacklock, 150 (Z.), 940, 941 (Hel.)
Thomson, J. G., 64, 385, 804 (Bl.)
Thomson, J. O., 466 (Misc.)
Thornton, H., 573 (Hel.)
Thurston, E. O., 346 (Am.)
Thurston, E. P., (663) (Fev.)
Tietze, S., 181 (Lep.)
Timothy, B., with Cunningham, 815 (Lab.)
Timpano, P., 489 (Misc.)
Tinnemeyer, W., 692 (Dys.)
Tirumurti, T. S., 923 (Misc.)
Tisnès, L., 417 (Misc.)
Tixier, L., 397 (Misc.)
Toda, T., 73 (Chl.)
Todd, R. E., with Petrie, 875 (Pl.)
Tokuye, K., & Hatai, K., 691 (Dys.)
——, with Suzuki & Hatai, 692 (Dys.)
Tomb, J. W., 227 (Hel.), 791 (Z.), 885 (Chl.)
Tonina, T. A., 579 (Hel.)
Tootell, G. T., 946, 947 (Hel.)
Toumanoff, K., with Metalnikov, (189) (Lep.)
Tournier, E., 9 (Der.)
Toyama, G., 541 (Hel.)
Toyama, Y., 275 (Jaun.)
Trabaud, 23 (Am.), 910 (Misc.)
——, with Lasnet, 984 (Tb.)
——, with Louis, 413 (Misc.)
Tramini, J., 988 (Tb.)
Trân Van An, with Montel & Dang Van Cúóng, 470 (Misc.)
Transactions of the Fifth Biennial Congress of the Far Eastern Assoc. of Trop. Med., 999 (B.R.)
Transactions of the Royal Society of Tropical Medicine & Hygiene, 118, 820 (Lab.)
Travers, E. A. O., 514 *bis*, 867 (Lep.)
——, with Fletcher, 93 (Misc.)
Tréfouel, M. & Mme., with Fourneau & Navarro-Martin, 322 (Misc.)
Tréfouel, Mme., with Fourneau, Tréfouel, J., & Vallée, 379 (S.S.)
Tréfouel, J., with Fourneau, Tréfouel, Mme, & Vallée, 379 (S.S.)
Trenti, E., 103 (Und.), 950 (Hel.)
Treston, M. L., 912 (Misc.)
Tricoire, R., 976 (Oph.)
Trimble, C. G., 597 (Mal.)
Triollet, R., with Sergent, Et., 259 (K.A.)
Tripputi, V., 257 (K.A.)
Trolli, G., 733 (R.F.)
Truche, C., with Cotoni & Raphael, 928 (B.R.)
Truffi, M., 860 (Lep.)
Trujillo, P., & Moral, 623 (Der.)

Tsuchiya, K., with Shiga & Kawamura, 697 (Dys.)
Tsujimura, (238) (Hel.)
Tsurumi, M., Hara, C., Imai, M., Awoki, T., & Sakamoto, T., 68 (Pl.)
Tsutsui, K., 578 (Hel.)
Tsutsui, G., 971 (Hel.)
Tsuyuki, H., with Ando, 936 (Hel.)
Tudhope, G. R., with Ferguson, 207 (Hel.)
Tull, J. C., 971 (Hel.)
Tunis, Pasteur Institute, 832 (Lab.)
Turner, A. L., with Ashworth, (159) (Z.)
Turner, P. E., 327 (Misc.)
Twort, F. W., 810 (Lab.)
Tyau, E. S., 524 (Pel.)
Tyndale, W. R., & Viko, L. E., 650 (Und.)

U

Ubhaya, with Russell & Ayyar, 729 (R.F.)
Uganda Protectorate, 830 (Lab.)
Unna, Jr., P., 513 (Lep.)
Unno, S., with Yamaguchi, Nagai & Ochiai, 450 (Chl.)
Untersteiner, R., 615 (Mal.)
Urchs, O., 617 (Mal.)
Urriola, C. L., 679 (B.R.)
Utenkow, M. D., 713 (Rab.)

V

Vaccarezza, with Destéfano, 974 (Hel.)
Vagliano, M., with Lesne, 642 (Sc.)
Vaglianos, M. S., 448 (Chl.)
Vaidya, B. A., 212 (Hel.)
Valderrana, P., 481 (Misc.)
Valenzuela, A. J., 7 (Der.)
Vallée, J., with Fourneau, Tréfouel, J., & Tréfouel, Mme, 379 (S.S.)
Valverde, B., 874 *bis* (Lep.)
Vampré, E., 475, 923 (Misc.)
van den Branden, F., (133) (Lab.), 757 (S.S.)
——, & van Hoof, L., 372, 376 (S.S.), 797 (Ys.), 390, 919 (Misc.)
Vanderyst, Le R. P., 747 (S S.)
Vardon, A. C., 120 (Lab.), 405 (Misc.)
Varenne, 492 (Misc.)
Vargas, M., (618) (Mal.)
Vasavada, D. M., 487 (Misc.)
Vasconcelos, A. B., 140 (Z.)
Vassal, J., 746 (S.S.)
Vaurs, R., with Sazerac, 924 (Misc.)
Vaz, L., (18) (Der.)
Veldee, M. V., 455 (Oph.)
Vendeuvre, 337 (Am.)
Venkatarangam Naidu, T., with Wright, 456 (Oph.)
Verbrycke, J. R., 922 (Misc.)
Verdelet, L., & Lacouture, M., 957 (Hel.)
Verhoef, A. W., 677 (Misc.)
Vervoort, H., 262 (R.F.)
Viala, J., with Manouelian, 709 (Rab.)
Vialatte, Ch., 431 (Z.)
——, with Oberlé, 594 (Mal.)
Vicente Huertas, J., with Lleras Acosta & Esguerra, 895 (Misc.)
Vieira, B., 279 (Y.F.), 451 (Ent.)
Vigne, P., 860 (Lep.)
——, & Pringault, E., 258 (K.A.)
——, with ——, 522 (Lep.)
Viko, L. E., with Tyndale, 650 (Und.)
Villaseñor, P., with Guerrero, Sison, Makalintal, Rosal & Ocampo, 535 (Hel.)
Villazon, M. N., 70 (Pl.)
Vincent, G. E., 764 (B.R.)
Visco, S., 925 (Misc.)
Viviani, R., & Martinelli, G., 601 (Mal.)
Voegtlin, C., Dyer, H. A., & Leonard, C. S., 414 (Misc.)
Vomela, S., 469 (Misc.), 709 (Rab.)

W

Waardenburg, P. J., 456 (Oph.)
Wada, Y., 136 (Z.)
Wade, H. W., 177, 867 (Lep.)
——, & Basa, J. A., 175 (Lep.)
——, & Lara, C. B., 867 (Lep.)
Wade, O., 782 (Z.)
Walch, E. W., 607 (Mal.) 790 (Z.)
Walker, E. L., 184 (Lep.)
——, MacArthur, C. G. & Sweeney, M.A., 177 (Lep.)
Walker, J. B., 324 (Misc.)
Walker, J., 602 (Mal.)
Walker, M., 953 (Hel.)
Walko, K., 350 (Dys.)
Waller, H. W. L., 335 (Misc.)
Walravens, P., 390 (Misc.), 600 (Mal.), 754 (S.S.)
Walsh, D., 439 (Z.)
Wampler, F. J., 914 (Misc.)
Wanstrom, R. C., 744 (Y.F.)
Waring, C. H., with Goldberger & Tanner, 525 (Pel.)
Warthin, A. S., 812 (Lab.)
Washimi, K., with Oba & Katayama, 277 (Jaun.)
Wasilewski, A., 443 (Pl.)
Wassell, C. M., 137 (Z.) 959 (Hel.)
Watanabe, H., Okuda, O., & Akamatsu, O., 890 (Chl.)
Watkins, T. H. & Moss, O. W., 572 (Hel.)

Watson, G. A., 523 (Pel.)
——, with Reeve, 35 (Dys.)
Watson, M., 302 (Mal.)
Wayson, N. E., 540, 937 (Hel.)
Weed, A. C., 778 (Z.)
Weidman, F. D., 17 (Der.)
Weill, E. & Bertoye, 454 (H.S.)
Weinberger, 962 (Hel.)
Weinstock, M., with Hess, 642 (Sc.)
Weissenberg, S., 730 (R.F.)
Weitzmann, I., with Kligler, 298 (Mal.)
Wells, H. S., with Lamson, Gardner, Gustafson, Maire & McLean, 411 (Misc.)
——, with Wilkins, 699 (Dys.)
de Werra, M., with Galli-Valerio, 153 (Z.)
Western, G. T., 125 (Lab.)
——, & Barnard, J. E., 123 (Lab.)
Westphal, K. & Georgi, 40 (Dys.)
Westphalen, H., 439 (Z.)
Wheatley, A. H., 867 (Lep.)
White, R. O., 278 (Y.F.)
Whittingham, H. E., 146 (Z.)
——, & Rook, A. F., 433 (Z.) 660 (Und.)
Whyte, G. D., 318 (Misc.)
Wilkins, L. & Wells, H. S., 699 (Dys.)
Wilkinson, A. G., with Castellani, 3 (Der.)
Wille, W. A., 79 (Diet.)
Williams, C. L. & Kemmerer, T. W., (71) (Pl.)
Williams, F. E., with Patterson, 208, 554 (Hel.)
Williamson, K. B., 777 (Z.)
Willis, H. H., 421 (Z.)
Wilson, 402 (Misc.)
Wilson, P. W., 366 (Ys.)
Winckel, C. W. F., 364 (Ys.)
Witas, P., with Senevet, 139 (Z.)
Wolbach, S. B., with Hertig, 781 (Z.)
——, & Schlesinger, M. J., 664 (Fev.)
Wolff, 728 (K.A.)
Wolff, J., 980 (Oph.)
Wolff, J. W., 191 (Hel.)
Wollman, E., 352 (Dys.)
Wologin & Morev, 605 (Mal.)
Woodcock, H. M., 328, 674, 917 (Misc.)
Woodland, W. N. F., (161) *bis* (Z.), 207, 551, 552 (Hel.)
Woods, A. C. & Moore, J. E., 981 (Oph.)
Worms & Pesme, 983 (Oph.)
Worster-Drought, C., & Beccle, H. C., 296 (Mal.)
Wright, H. W., 339 (Am.)
Wright, R. E., 956 (Hel.)
——, & Venkatarangam Naidu, T., 456 (Oph.)
Wright, W. R., 780 (Z.)
Wu, H., with Mcleney, 945 (Hel.)
Wu, S. C., 524 (Pel.)
Wu Lien-Teh (G. L. Tuck), 879 (Pl.)
Wundt, N., 573 (Hel.)

Y

Yagi, K., 617 (Mal.)
Yagle, E. M. & Kolmer, J. A., 186 (Lep.)
Yakimoff, W. L., 118 (Lab.), 776 (Z), 747 (S.S.)
Yamada, S., 206, 212 (Hel.)
Yamada, T., Inouye, Z., & Kakinuma, R., 355 (Dys.)
Yamaguchi, K., Nagai, S., Unno, S., & Ochiai, S., 450 (Chl.)
Yamanouchi, T., (75) (Chl.)
Yo Gen Kan, 602 (Mal.)
Yokogawa, S., 215 (Hel.)
Yorke, W. & Macfie, J. W. S., 783 (Z.)
Yoshida, S., 571 (Hel.)
——, & Ogata, S., 551 (Hel.)
——, & Takano, R., 218, 553 (Hel.)
Young, C. W., 247 (K.A.)
——, & van Sant, H. M., 251 (K.A.)
——, with Smyly, 720 (K.A.)
——, ——, & Brown, C., 720 (K.A.)
Young, T. M., 245 (K.A.), 595 (Mal.) 998 (B.R.)
——, with Chalam, 285 (Mal.)
——, with Fox & McDonald, 406 (Misc.)
Young, W. A., 66 (Bl), 507 (Lep.)

Z

Zabolotny, D., 70 (Pl.)
Zangger, R., 698 (Dys.)
Zapata, E., (975) (Hel.)
Zdansky, E. & Herzog, B. M., 699 (Dys.)
Zeiss, H., 883 (Pl.)
——, with Härle & Sütterlin, 192 (Hel.)
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Boletin de la Sociedade de Medicina e Cirurgia de S. Paulo (Brazil)	1919—	Vol.	2—(ser. 2)	No. 2—
Brazil Medico (Rio de Janeiro)	1909—	Vol.	23—	
British Guiana Medical Annual	1890–92, 1894–1902, 1906—			
Cronica Medica (Lima)	1913—	Vol.	30—	
Gaceta Medica de Caracas (Caracas)	1914—	Vol.	21—	
Gaceta Medica de Ciudad-Bolivar (Ciudad-Bolivar, Venezuela)	1920–21	No.	67–80	
Memorias do Instituto Butantan (S. Paulo)	1918	Vol.	1 Nos.	1–2
Memorias do Instituto Oswaldo Cruz (*Rio de Janeiro-Manguinhos*)	1909—	Vol.	1—	
Repertorio de Medicina y Cirugia (Bogota)	1914—	Vol.	6—	
Revista Clinica (*Medellin, Colombia*)	1916—	Vol.	1—	
Revista del Instituto Bacteriologico (Buenos Aires)	1918–19	Vols.	1–2	[Incomplete]
Revista Medico-Cirurgica do Brazil (Rio de Janeiro)	1921—	Vol.	29—	
Revista de Veterinaria e Zootechnia (Rio de Janeiro)	1917—	Vol.	7—	
Revista Zootecnica (Buenos Aires)	1920—	Vol.	7—	No. 84—
Sciencia Medica. Revista Brasileira de Medicina e Sciencias Affins (*Rio de Janeiro*)	1923—	Vol.	1—	
Servico Sanitario do Estado de Sao Paulo Trabalhos publicados	1918—	N.S.	No. 1—	

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American Journal of Hygiene (*Baltimore*)	1921—	Vol.	1—	
American Journal of Public Health (Albany, N.Y.)	1913–16	Vols.	3–6	
	1924—	Vol.	14—	
American Journal of Tropical Medicine (*Baltimore*)	1921—	Vol.	1—	
Archives of Dermatology & Syphilology [*formerly* Journal of Cutaneous Disease including Syphilis] (New York)	1913—	Vol.	31—	
Archives of Internal Medicine (*Chicago*)	1908—	Vol.	1—	
Boston Medical & Surgical Journal (Boston)	1915—	Vol.	172—	
Bureau of Animal Industry Bulletins (Washington)	1909—	[Incomplete]		
Collected Reprints from the George Williams Hooper Foundation for Medical Research (Univ. of California)	1915—	Vol.	1—	
Collected Studies from the Research Laboratory, Department of Health, City of New York	1906—	Vol.	1—	
Cornell Veterinarian (Ithaca, N.Y.)	1917—	Vol.	7—	
Experiment Station Records (Washington)	1921—	Vol.	44—	
Hygeia (Chicago)	1924—	Vol.	2—	
Hygienic Laboratory Bulletins (Washington)	1903—	[Incomplete]		
Illinois Biological Monographs (*Urbana*)	1915—	Vol.	1—	
Index Medicus (Washington)	1912–20	(2 ser.)	Vol. 10–18	
Journal of Agricultural Research (Washington)	1920—	Vol.	20—	

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Journal of the American Medical Association (Chicago)	1910—	Vol.	54—
Journal of the American Veterinary Medical Association	1917—	Vol.	51—
Journal of Economic Entomology (*Concord*)	1908—	Vol.	1—
Journal of Experimental Medicine (*New York*)	1896—	Vol.	1—
Journal of Industrial Hygiene & Abstract of Literature (Boston)	1922—	Vol.	3
Journal of Infectious Diseases (*Chicago*)	1904—	Vol.	1—
Journal of Laboratory & Clinical Medicine (St. Louis)	1916—	Vol.	2—
Journal of Medical Research (Boston)	1919—	Vol.	41—
Journal of Parasitology (*Urbana*)	1914—	Vol.	1—
Journal of Sociologic Medicine (Easton)	1916–18	Vol.	17–19
Long Island Medical Journal	1919—	Vol.	13—
Medical Record (New York)	1914–22	Vols.	86–101
Military Surgeon (Washington)	1913—	Vol.	33—
Monographs of the Rockefeller Institute for Medical Research (New York)	1920—	No.	13—
New Orleans Medical & Surgical Journal (New Orleans)	1912—	Vol.	65—
New York Medical Journal (New York)	1910–20	Vols.	91–112
Proceedings of the New Jersey Mosquito Extermination Association	1914—		
Proceedings of the Society for Experimental Biology and Medicine (*New York*)	1903—	Vol.	1—
Proceedings of the United States National Museum (Washington)	1879—	Vol.	2— [Incomplete]
Public Health Bulletins (Washington)	1908—	[Incomplete]	
Public Health Reports (Washington)	1909—	Vol.	24—
School of Hygiene & Public Health : Johns Hopkins University : Collected papers (*Baltimore*)	1920—	Vol.	1—
Southern Medical Journal (Birmingham, Alabama)	(1911, 1912 incomplete) 1913—	Vol.	6—
Southwestern Medicine (*El Paso, Texas*)	1917—	Vol.	1—
Studies from the Rockefeller Institute for Medical Research. Reprints (New York)	1913—	Vol:	17—
Texas State Journal of Medicine (Fort Worth)	1905–22	Vols.	1–18 [Incomplete]
United States Naval Medical Bulletin (Washington)	1909—	Vol.	3—
United States War Department Bulletin (*Washington*)	1913—	No.	1—
University of California (Berkeley) :			
Publications in Pathology	1903—	Vol.	1—
Publications in Zoology	1908—	Vol.	6—
University of Kansas : Science Bulletin (*Lawrence*)	1902—	Vol.	1—
Venereal Disease Information (Washington)	1923—	Vol.	4—
Veterinary Medicine (Chicago)	1913—	Vol.	8—

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Bulletin Médical Franco-Chinois (*Peking*)	1920—	Vol.	1—
China Medical Journal (Shanghai)	1912—	Vol.	26—
Contributions from the Peking Union Medical College (*Peking*)	1921—	Vol.	1—
National Medical Journal of China (Shanghai)	1919—	Vol.	5—

EAST INDIAN ARCHIPELAGO.

Geneeskundig Tijdschrift voor Nederlandsch-Indië (Rijswijk-Batavia) ..	1901—	Vol.	41—	[Incomplete]
Journal of the Philippine Islands Medical Association (Manila)	1921—	Vol.	1—	
Mededeelingen van den Burgerlijken Geneeskundigen Dienst in Nederlandsch-Indië (*Batavia*)	1912—	Vol.	1—	
Mededeelingen uit het Geneeskundig Laboratorium te Weltevreden (Batavia) ..	1919—	3 Ser. A.		No. 1—
Nederlandsch-Indische Bladen voor Diergeneeskunde en Dierentielt (Batavia)	1919—	Vol.	31—	
Philippine Agricultural Review (Manila)	1916—	Vol.	9—	
Philippine Journal of Science, formerly *Philippine Journal of Science. Section B. Philippine Journal of Tropical Medicine* (*Manila*)	1906—	Vol.	1—	

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Agricultural Research Institute, Pusa, Bulletins. (Calcutta)	1912—			[Incomplete]
Arquivos Indo-Portugueses de Medicina e Historia Natural (*Nova Goa*) ..	1921—	Vol.	1—	
Boletim Geral de Medicina e Farmacia (Nova Goa)	1919—	5 Ser.		No. 1—
Indian & Eastern Engineer (Calcutta) ..	1915—	Vol.	36—	
Indian Engineering (Calcutta)	1915—	Vol.	57—	No. 6—
Indian Journal of Medical Research (*Calcutta*)	1913—	Vol.	1—	
Indian Medical Gazette (Calcutta) ..	1889–1908	[Vols. 24 & 34–43 Incomplete]		
	1909—	Vol.	44—	
Journal of the Association of Medical Women in India (Delhi)	1923—	Vol.	11—	
Memoirs of the Department of Agriculture in India. (Calcutta) :				
Bacteriological Series ..	1912—	Vol.	1—	
Veterinary Series ..	1913—	Vol.	1—	
Report of the Agricultural Research Institute and College, Pusa. (Calcutta) ..	1907—			[Incomplete]

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Annual Reports of the Institute for Medical Research, Kuala Lumpur, Federated Malay States. (Kuala Lumpur) ..	1912—			
Bulletin de la Société Médico-Chirurgicale de l'Indochine (Hanoi & Haiphong) ..	1910—	Vol.	1—	[Vol. 2 Incomplete]
Medical Journal of the Siamese Red Cross	1918–20	Vol.	1–3	
Studies from Institute for Medical Research, Federated Malay States (Singapore)	1901—	Vol.	1—	[Incomplete]
Transactions of the Malaya Branch of the British Medical Association (Singapore)	1923—	No.	9—	

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Acta Scholae Medicinalis Universitatis Imperialis in Kioto (*Kioto*)	1916—	Vol.	1—	
Aichi Journal of Experimental Medici (*Nagoya*)	1923—	Vol.	1—	No. 1—
Japanese Journal of Medical Sciences. Abstracts (*Tokyo*)	1922—	Vol.	1—	
Japan Medical World (Tokyo)	1921—	Vol.	1—	
Japanische Zeitschrift für Dermatologie u. Urologie (Tokyo)	1917—	Vol.	17—	No. 7—
Jikwa Zasshi	1917–22			

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Journal of the College of Agriculture, Imperial University of Tokyo (Tokyo)	1916—	Vol.	3—		
Journal of the Japanese Society of Veterinary Science	1922—	Vol.	1—		
Journal of Oriental Medicine (Dairen)	1923—	Vol.	1—	No.	2—
Kitasato Archives of Experimental Medicine (Tokyo)	1917—	Vol.	1—		
Kyoto Igaku Zassi (Kyoto)	1917–21	Vols.	14–18		
Mitteilungen aus der medizinischen Fakultät der Kaiserlichen Kyushu-Universität (Fukuoka)	1917—	Vol.	3—		
Mitteilungen aus der medizinischen Fakultät der Kaiserlichen Universität zu Tokyo (Tokio)	1911—	Vol.	10—		
Mitteilungen ueber allgemeine Pathologie und pathologische Anatomie [formerly *Mitteilungen aus dem pathologischen Institut der Kaiserlichen Universität zu Sendai, Japan*]	1919—	Vol.	1—	Nos.	1–2
Mitteilungen der Medizinischen Gesellschaft zu Tokio (Tokio)	1917–20	Vol.	31–34		
Saikingaku Zasshi	1917–23				
Sei-i-Kwai Medical Journal (Tokio)	1913—	Vol.	32—		
Taiwan Igakkai Zasshi	1917—				
Tokyoer Medizinische Wochenschrift (Tokyo)	1917—	No.	2046		
Verhandlungen der Japanischen Pathologischen Gesellschaft (Tokyo)	1911—	Vol.	1—		

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Archives de l'Institut Pasteur d'Algerie (Algiers)	1923—	Vol.	1—		
Archives de l'Institut Pasteur de Tunis (Tunis)	1906—	Vol.	1—		
Archives des Instituts Pasteur de l'Afrique du Nord (Algiers & Tunis)	1921–22	Vols.	1–2		
Archivio Italiano di Science Mediche Coloniali (Tripoli)	1920—	Vol.	1—		
Bulletin Médical du Katanga (Elisabethville)	1924—	No.	1—		
Bulletin de la Société Medico-Chirurgicale française de l'Ouest-Africain (Dakar)	1919–21	Vols.	1–3		
Bulletin de la Société Ophthalmologie d'Egypte	1912—				
Journal of the Department of Agriculture, Union of South Africa (Pretoria)	1921—				
Kenya Medical Journal (Nairobi)	1924—	Vol.	1—		
Magallah Tibbiah El Masriah (Cairo)	1923—				
Maroc-Médical (Casablanca)	1923—	No.	13—		
Medical Journal of South Africa [formerly Transvaal Medical Journal] (Johannesburg)	1912—	Vol.	8—		
Nyasaland Sleeping Sickness Diary (Zomba)	1908–15	No.	1–25		
Proceedings of the Transvaal Mine Medical Officers' Association (Johannesburg)	1921—	Vol.	1—		
Revista Médica de Angola (Loanda)	1921—	Vol.	1—		
Rhodesia Agricultural Journal (Salisbury)	1915—	Vol.	12—		
South African Institute for Medical Research (Publications)	1913—	Vol.	1—		
South African Medical Record (Cape Town)	1910—	Vol.	8—		

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Australian Institute of Tropical Medicine. Collected Papers (Townsville)	1914—	No.	1—		
Commonwealth of Australia: Quarantine. Service Publications (Melbourne)	1913–20	No.	1–19		

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Commonwealth of Australia: Department of Health. Service Publications (*Melbourne*)	1922—	No.	20—	
Industrial Hygiene	1924—	No.	1—	
Tropical Division	1923—	No.	1—	
Veterinary Hygiene	1924—	No.	1—	
Health (*Melbourne*)	1923—	Vol.	1—	
Health Forum (*Sydney*)	1923	Vol.	1	Nos. 1–4
Medical Journal of Australia (*Sydney*) ..	1914—	Vol.	1—	
Queensland Agricultural Journal ..	1919—	Vol.	12—	
Records of the South Australian Museum ..	1918—	Vol.	1—	

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New Zealand Medical Journal (Wellington)	1913—	Vol.	12—	No. 45—

The Bureau possesses complete sets of the following JOURNALS WHICH HAVE CEASED PUBLICATION :—

American Journal of Tropical Diseases and Preventive Medicine (*New Orleans*)	1913–16	Vols.	1–3	
American Society of Tropical Medicine (*Transactions*) (*New Orleans*)	1904–14	Vols.	1–9	
Archives des Instituts Pasteur de l'Afrique du Nord (*Algiers & Tunis*)	1921–22	Vols.	1–2	
Journal of the London School of Tropical Medicine (*London*)	1911–13	Vols.	1–2	
Journal of Tropical Veterinary Science (*Calcutta*)	1906–12	Vols.	1–7	
Kala Azar Bulletin (*London*)	1911–12	Nos.	1–3	
Paludism (*Simla*)	1910–12	Nos.	1–5	
Scientific Memoirs by Officers of the Medical & Sanitary Department of the Government of India (*Calcutta*) ..	1902–13	(New Ser.) Nos.		1–60
Sleeping Sickness Bulletin (*London*) ..	1908–12	Vols.	1–4	
Yellow Fever Bureau Bulletin (*Liverpool*)	1911–15	Vols.	1–3	

NOTE.—The Director would consider proposals for the exchange of the Bureau publications with other medical and scientific journals in which original papers on tropical diseases or parasitology are published.

The following serial publications not received by the Bureau are taken by the London School of Hygiene and Tropical Medicine and are available for reference in the joint library of the School and the Bureau (TROPICAL DISEASES LIBRARY) :—

Annales de Médecine (Paris)	1920—	Vol.	7—	
Australian Journal of Experimental Biology and Medical Science (Adelaide) ..	1924—	Vol.	1—	
Biochemical Journal (London)	1923—	Vol.	17—	
Bulletin de l'Académie de Médecine (Paris)	1922—	Vol.	87—	
Comptes Rendus de l'Académie des Sciences (Paris)	1910—	Vol.	150—	
Index Medicus (Washington)	1921—	3rd. Ser.		Vol. 1—
Indian Medical Record (Calcutta) ..	1919—	Vol.	39—	
Journal de physiologie et de pathologie générale (Paris)	1919—	Vol.	18—	
Medical Annual (Bristol)	1921—	Vol.	39—	
Mitteilungen aus dem Zoologischen Museum in Berlin	1910—	Vol.	5—	
Nature (London)	1921—	Vol.	108—	
Quarterly Cumulative Index to Current Medical Literature (Chicago) ..	1921—	Vol.	6—	
Records of the Indian Museum (Calcutta)	1916—	Vol.	12—	
Sanidad y Beneficencia (Habana) ..	1910—	Vol.	3—	
Transactions of the South Indian Branch of the British Medical Association (Madras)	1899—	Vol.	8—	
Zoological Record (London)	1920—	Vol.	57—	